ELECTROLUX SERVICE MANUAL

GLMV169DB
GLMV169DQ
GLMV169DS
PLMV169DC

*** REVISION 1**

S54M238V169DE

PLMV169DC

MODELS

OVER THE RANGE MICROWAVE OVENS

GLMV169DB * Serial # 44513937 ~ and above
GLMV169DQ * Serial # 44513257 ~ and above
GLMV169DS * Serial # 44812717 ~ and above
PLMV169DC * Serial # 44514859 ~ and above

In the interest of user-safety the oven should be restored to its original condition and only parts identical to those specified should be used.

WARNING TO SERVICE PERSONNEL: Microwave ovens contain circuitry capable of producing very high voltage and current. Contact with the following parts may result in a severe, possibly fatal, electrical shock. (High Voltage Capacitor, High Voltage Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness etc..)

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***NOTE:** **Units with serial number range above, employ new Chassis supports. This manual is for units using these components as stated.**

This document has been published to be used for after sales service only. The contents are subject to change without notice.

ELECTROLUX HOME PRODUCTS, INC.
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P/N 316439255

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(a) Do not operate or allow the oven to be operated with the door open.
(b) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary: (1) interlock operation, (2) proper door closing, (3) seal and sealing surfaces (arcing, wear, and other damage), (4) damage to or loosening of hinges and latches, (5) evidence of dropping or abuse.
(c) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.
(d) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
(e) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

(RD2110U)

BEFORE SERVICING

Before servicing an operative unit, perform a microwave emission check as per the Microwave Measurement Procedure outlined in this service manual.
If microwave emissions level is in excess of the specified limit, contact ELECTROLUX HOME PRODUCTS, INC. immediately.

If the unit operates with the door open, service person should 1) tell the user not to operate the oven and 2) contact ELECTROLUX HOME PRODUCTS, INC. and Food and Drug Administration's Center for Devices and Radiological Health immediately.

Service personnel should inform ELECTROLUX HOME PRODUCTS, INC. of any certified unit found with emissions in excess of $4mW/cm^2$. The owner of the unit should be instructed not to use the unit until the oven has been brought into compliance.

(RD8100U)

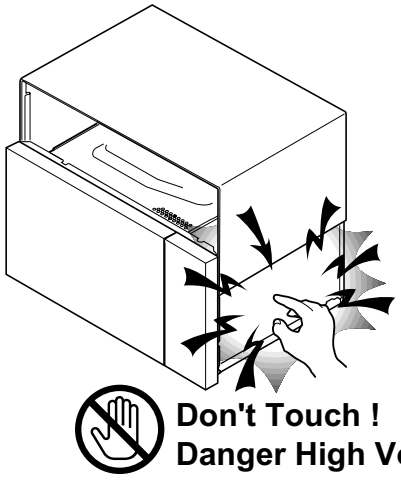
WARNING TO SERVICE PERSONNEL

Microwave ovens contain circuitry capable of producing very high voltage and current, contact with following parts may result in a severe, possibly fatal, electrical shock.

(Example)

High Voltage Capacitor, High Voltage Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness etc..

Read the Service Manual carefully and follow all instructions.



Before Servicing

1. Disconnect the power supply cord , and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.

WARNING: RISK OF ELECTRIC SHOCK. DISCHARGE THE HIGH-VOLTAGE CAPACITOR BEFORE SERVICING.

The high-voltage capacitor remains charged about 60 seconds after the oven has been switched off. Wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

Whenever troubleshooting is performed the power supply must be disconnected. It may in, some cases, be necessary to connect the power supply after the outer case has been removed, in this event,

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the leads to the primary of the power transformer.
5. Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
6. After that procedure, reconnect the power supply cord.

When the testing is completed,

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Reconnect the leads to the primary of the power transformer.
5. Reinstall the outer case (cabinet).
6. Reconnect the power supply cord after the outer case is installed.
7. Run the oven and check all functions.

After repairing

1. Reconnect all leads removed from components during testing.
2. Reinstall the outer case (cabinet).
3. Reconnect the power supply cord after the outer case is installed.
4. Run the oven and check all functions.

Microwave ovens should not be run empty. To test for the presence of microwave energy within a cavity, place a cup of cold water on the oven turntable, close the door and set the power to HIGH and set the microwave timer for two (2) minutes. When the two minutes has elapsed (timer at zero) carefully check that the water is now hot. If the water remains cold carry out **Before Servicing** procedure and re-examine the connections to the component being tested.

When all service work is completed and the oven is fully assembled, the microwave power output should be checked and microwave leakage test should be carried out.

MICROWAVE MEASUREMENT PROCEDURE

A. Requirements:

1) Microwave leakage limit (Power density limit): The power density of microwave radiation emitted by a microwave oven should not exceed 1mW/cm^2 at any point 5cm or more from the external surface of the oven, measured prior to acquisition by a purchaser, and thereafter (through the useful life of the oven), 5 mW/cm^2 at any point 5cm or more from the external surface of the oven.
2) Safety interlock switches:
   Primary interlock relay switch shall prevent microwave radiation emission in excess of the requirement as above mentioned. Secondary interlock relay and door sensing switch shall prevent microwave radiation emission in excess of 5 mW/cm2 at any point 5cm or more from the external surface of the oven.

B. Preparation for testing:
Before beginning the actual measurement of leakage, proceed as follows:
1) Make sure that the actual instrument is operating normally as specified in its instruction booklet.

Important:
Survey instruments that comply with the requirement for instrumentation as prescribed by the performance standard for microwave ovens, 21 CFR 1030.10(c)(3)(i), must be used for testing.

2) Place the oven tray in the oven cavity.
3) Place the load of 275±15 ml (9.8 oz) of tap water initially at 20±5^{O}C (68^{O}F) in the center of the oven cavity.
   The water container shall be a low form of 600 ml (20 oz) beaker with an inside diameter of approx. 8.5 cm (3-1/2 in.) and made of an electrically nonconductive material such as glass or plastic.
   The placing of this standard load in the oven is important not only to protect the oven, but also to insure that any leakage is measured accurately.
4) Set the cooking control on Full Power Cooking Mode.
5) Close the door and select a cook cycle of several minutes. If the water begins to boil before the survey is completed, replace it with 275 ml of cool water.

C. Leakage test:

Closed-door leakage test (microwave measurement):
1) Grasp the probe of the survey instrument and hold it perpendicular to the gap between the door and the body of the oven.
2) Move the probe slowly, not faster than 1 in./sec. (2.5 cm/sec.) along the gap, watching for the maximum indication on the meter.
3) Check for leakage at the door screen, sheet metal seams and other accessible positions where the continuity of the metal has been breached (eg., around the switches, indicator, and vents).
   While testing for leakage around the door, pull the door away from the front of the oven as far as is permitted by the closed latch assembly.
4) Measure carefully at the point of highest leakage and make sure that the highest leakage is no greater than 4mW/cm^2, and that the primary interlock switch/secondary interlock relay does turn the oven OFF before any door movement.

NOTE: After servicing, record data on service invoice and microwave leakage report.

SERVICE MANUAL

ELECTROLUX

OVER THE RANGE
MICROWAVE OVEN

GLMV169DB / GLMV169DQ
GLMV169DS / PLMV169DC

FOREWORD

This Manual has been prepared to provide Electrolux Home Products Service Personnel with Operation and Service Information for the ELECTROLUX OVER THE RANGE MICROWAVE OVENS, GLMV169DB, GLMV169DQ, GLMV169DS, PLMV169DC.

It is recommended that service personnel carefully study the entire text of this manual so that they will be qualified to render satisfactory customer service.

Check the interlock switches and the door seal carefully. Special attention should be given to avoid electrical shock and microwave radiation hazard.

WARNING

Never operate the oven until the following points are ensured.
(A) The door is tightly closed.
(B) The door brackets and hinges are not defective.
(C) The door packing is not damaged.
(D) The door is not deformed or warped.
(E) There is not any other visible damage with the oven.

Servicing and repair work must be carried out only by trained service personnel.

DANGER

Certain initial parts are intentionally not grounded and present a risk of electrical shock only during servicing. Service personnel - Do not contact the following parts while the appliance is energized;
High Voltage Capacitor, Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness;
If provided, Vent Hood, Fan assembly, Cooling Fan Motor.

All the parts marked "*" on parts list are used at voltages more than 250V.

Removal of the outer wrap gives access to voltage above 250V.

All the parts marked "Δ" on parts list may cause undue microwave exposure, by themselves, or when they are damaged, loosened or removed.

ELECTROLUX HOME PRODUCTS, INC.

PRODUCT DESCRIPTION
GENERAL INFORMATION
OPERATION
TROUBLESHOOTING GUIDE AND TEST PROCEDURE
TOUCH CONTROL PANEL
COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE
WIRING DIAGRAM
PARTS LIST

PRODUCT SPECIFICATION

ITEM	DESCRIPTION
Power Requirements	120 Volts / 13.3 Amperes 60 Hertz Single phase, 3 wire grounded
Power Output	1000 watts (IEC-705 TEST PROCEDURE) Operating frequency of 2450MHz
Case Dimensions	Width 29-15/16" Height 16-3/8" Depth 15- 1/16" (Not including the door handle)
Cooking Cavity Dimensions 1.6 Cubic Feet	Width 21" Height 8-7/8" Depth 14-7/16"
Hood lamp	2 bulbs, 20W x 2, Incandescent light bulbs
Hood fan	Approx. 300 C.F.M.
Control Complement	Touch Control System Clock (1:00 - 12:59) Timer (0 - 99 min. 99 seconds) Microwave Power for Variable Cooking Repetition Rate; P-HI ..... Full power throughout the cooking time P-90 ..... approx. 90% of Full Power P-80 ..... approx. 80% of Full Power P-70 ..... approx. 70% of Full Power P-60 ..... approx. 60% of Full Power P-50 ..... approx. 50% of Full Power P-40 ..... approx. 40% of Full Power P-30 ..... approx. 30% of Full Power P-20 ..... approx. 20% of Full Power P-10 ..... approx. 10% of Full Power P-0 ..... No power throughout the cooking time SENSOR COOKING pads, DEFROST pads, ONE-TOUCH COOKING pads, Memory Cook pad, Number selection pads, Power Level pad, Timer / Pause pad, Clock pad, Auto Fan, Plus 1 Miute pad, Turntable On / Off pad, START pad Work Light pad, Night Light pad, FAN HI / LO pad, Clear/Off pad
Oven Cavity Light	20W x 1 Incandescent light bulb
Safety Standard	UL Listed FCC Authorized DHHS Rules, CFR, Title 21, Chapter 1, Subchapter J
Weight	Approx. 56 lbs.

GENERAL INFORMATION

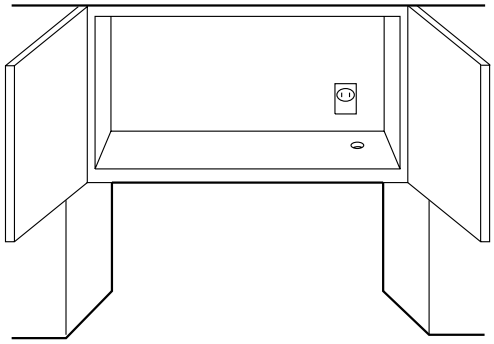
GROUNDING INSTRUCTIONS

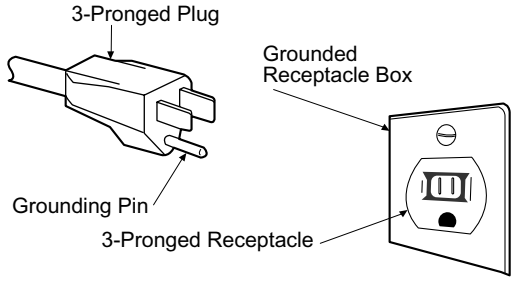
This oven is equipped with a three prong grounding plug. It must be plugged into a wall receptacle that is properly installed and grounded in accordance with the National Electrical Code and local codes and ordinances.
In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current.
WARNING: Improper use of the grounding plug can result in a risk of electric shock.

Electrical Requirements

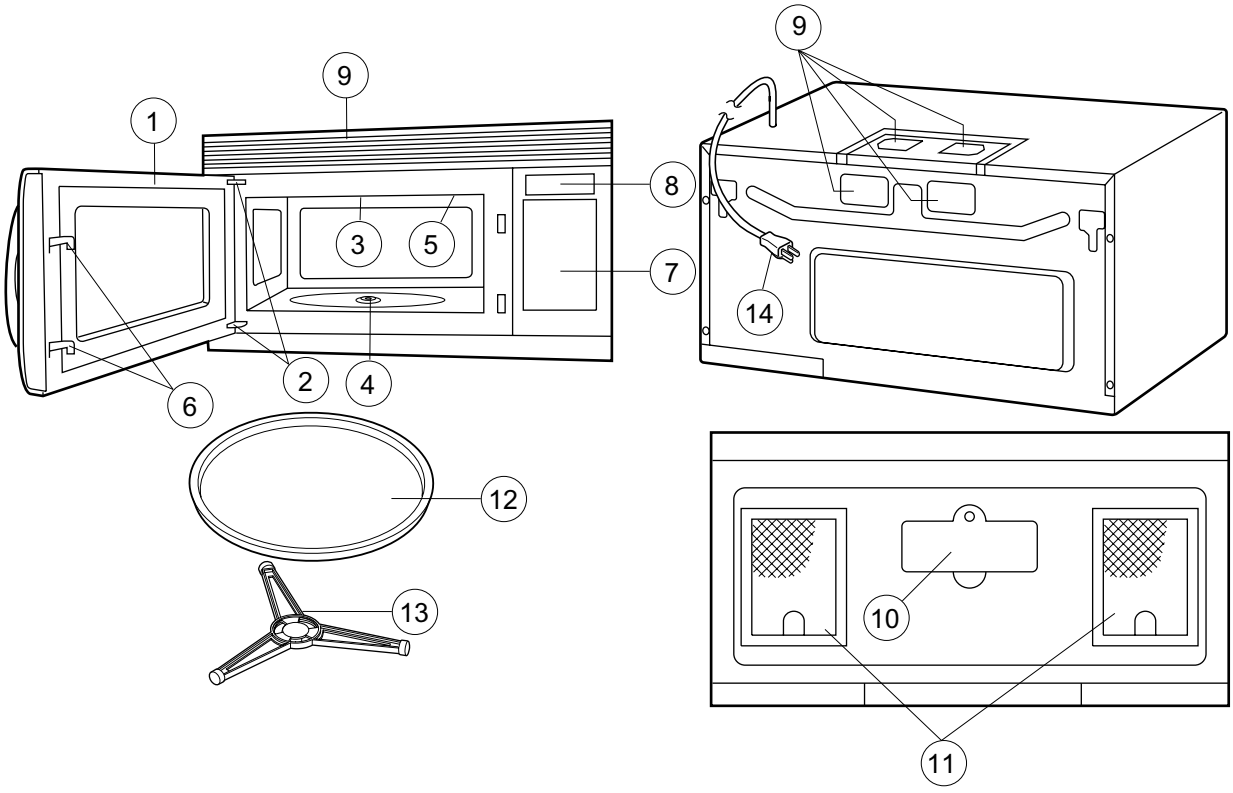
The oven is equipped with a 3-prong grounding plug. DO NOT UNDER ANY CIRCUMSTANCES CUT OR REMOVE THE GROUNDING PIN FROM THE PLUG.

The power supply cord and plug must be connected to a separate 120 Volt AC, 60 Hz, 15 Amp. or more dedicated line, using a grounded receptacle. The receptacle should be located inside the cabinet directly above the Microwave Oven/Hood system mounting location.



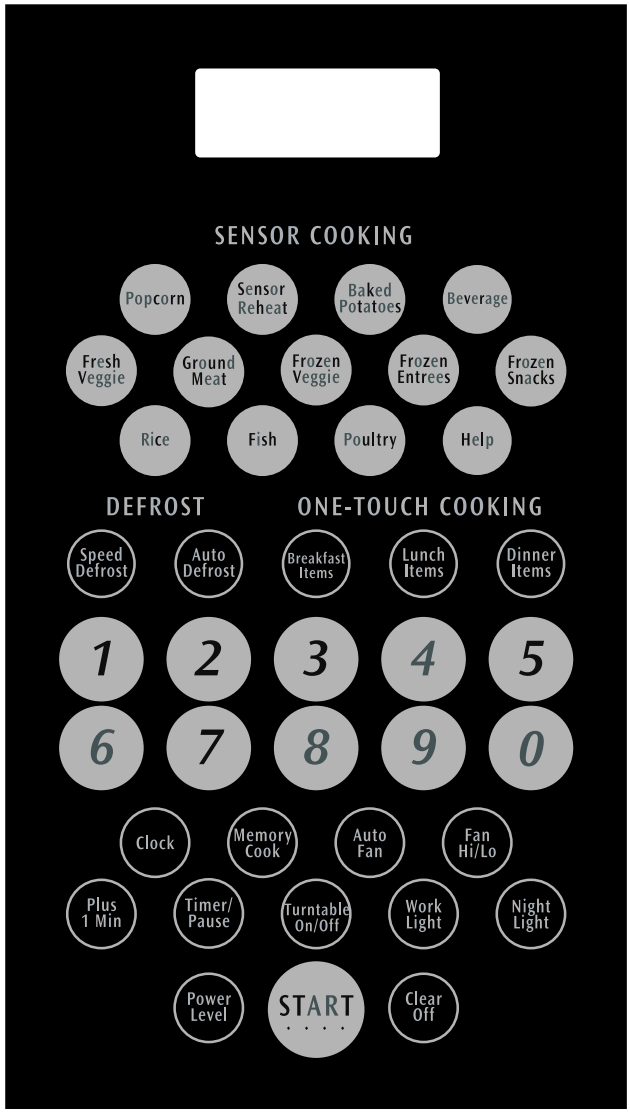


OVEN DIAGRAM



1. Oven door with see-through window.
2. Door hinges.
3. Stirrer cover.
4. Turntable motor shaft.
5. Oven lamp.
   It will light when oven is operating or door is open.
6. Door latches.
   The oven will not operate unless the door is securely closed.
7. Auto-Touch control panel.
8. Time display: Digital display, 99 minutes 99 seconds.
9. Ventilation openings.
10. Light Cover.
11. Grease filters.
12. Removable turntable.
    The turntable will rotate clockwise or counterclockwise.
    Only remove for cleaning.
13. Removable turntable support.
14. Power supply cord

CONTROL PANEL



GLMV169DB/GLMV169DQ
GLMV169DS/PLMV169DC
(Colors will vary)

OPERATION

DESCRIPTION OF OPERATING SEQUENCE

The following is a description of component functions during oven operation.

OFF CONDITION

Closing the door activates the door sensing switch and secondary interlock switch. (In this condition, the monitor switch contacts are opened.)
When oven is plugged in, 120 volts A.C. is supplied to the control unit. (Figure O-1).

1. The display will show "WELCOME, PRESS CLEAR AND PRESS CLOCK".
   To set any program or set the clock, you must first touch the STOP/CLEAR pad. The display will clear, and " : " will appear .

COOKING CONDITION

Program desired cooking time touching the NUMBER pads. When the START pad is touched, the following operations occur:

1. The contacts of relays are closed and components connected to the relays are turned on as follows.
   (For details, refer to Figure O-2)

RELAY	CONNECTED COMPONENTS
RY1	Oven lamp / Fan motor / Stirrer motor
RY2	Power transformer
RY3	Turntable motor
RY4	Hood fan motor

2. 120 volts A.C. is supplied to the primary winding of the power transformer and is converted to about 3.3 volts A.C. output on the filament winding, and approximately 2000 volts A.C. on the high voltage winding.
3. The filament winding voltage heats the magnetron filament and the H.V. winding voltage is sent to a voltage doubler circuit.
4. The microwave energy produced by the magnetron is channelled through the waveguide into the cavity feed-box, and then into the cavity where the food is placed to be cooked.
5. Upon completion of the cooking time, the power transformer, oven lamp, etc. are turned off, and the generation of microwave energy is stopped. The oven will revert to the OFF condition.
6. When the door is opened during a cook cycle, monitor switch, door sensing switch, primary interlock switch, and secondary interlock relay are activated with the following results. The circuits to the stirrer motor, the cooling fan motor, the turntable motor, and the high voltage components are de-energized, and the digital read-out displays the time still remaining in the cook cycle when the door was opened.
7. The monitor switch is electrically monitoring the operation of the primary interlock switch, and door sensing switch is mechanically associated with the door so that it will function in the following sequence.
   (1) When the door opens from a closed position, the secondary interlock relay, door sensing switch, and primary interlock switch open their contacts, and then the monitor switch contacts close.
   (2) When the door is closed from the open position, the monitor switch contacts first open, and then the contacts of the primary interlock switch close.

If the primary interlock switch fail with their contacts closed when the door is opened, the closing of the monitor switch contacts will form a short circuit through the C/T fuse, primary interlock switch and causing the C/T fuse to blow.

POWER LEVEL P-0 TO P-90 COOKING

When Variable Cooking Power is programmed, the 120 volts A.C. is supplied to the power transformer intermittently through the contacts of relay (RY2) which is operated by the control unit within an interval second time base. Microwave power operation is as follows:

VARI-MODE	ON TIME	OFF TIME
Power 10(P-HI) (100% power)	32 sec.	0 sec.
Power 9(P-90) (approx. 90% power)	30 sec.	2 sec.
Power 8(P-80) (approx. 80% power)	26 sec.	6 sec.
Power 7(P-70) (approx. 70% power)	24 sec.	8 sec.
Power 6(P-60) (approx. 60% power)	22 sec.	10 sec.
Power 5(P-50) (approx. 50% power)	18 sec.	14 sec.
Power 4(P-40) (approx. 40% power)	16 sec.	16 sec.
Power 3(P-30) (approx. 30% power)	12 sec.	20 sec.
Power 2(P-20) (approx. 20% power)	8 sec.	24 sec.
Power 1(P-10) (approx. 10% power)	6 sec.	26 sec.
Power 0(P-0) (0% power)	0 sec.	32 sec.

Note: The ON/OFF time ratio does not correspond with the percentage of microwave power, because approx. 2 seconds are needed for heating of the magnetron filament.

BREAKFARST, LUNCH, DINNER

BREAKFAST, LUNCH, DINNER will automatically compute the microwave power and cooking time. Set the desired

program by touching one of the BREAKFAST, LUNCH, DINNER pads, and number pad to select menu. Enter the weight or quantity by touching the Number pads. When the START pad is touched, the following operations occur:

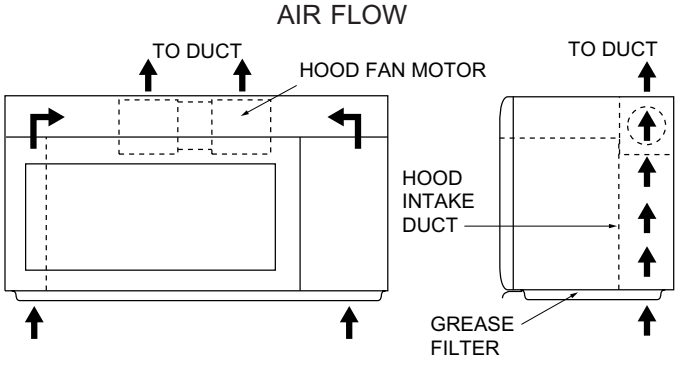
1. The COOK indicator will light.
2. The cooking time will appear on the display and start counting down to zero. The cooking time is adjusted automatically according to the weight of the food.
3. The shut-off relays (RY1, RY2 and RY3) are energized, turning on the oven lamp, turntable motor, cooling fan motor and convection motor. The power supply voltage is applied to the heating element.
4. Now, the oven is in the microwave cooking mode.

COMPU DEFROST COOKING

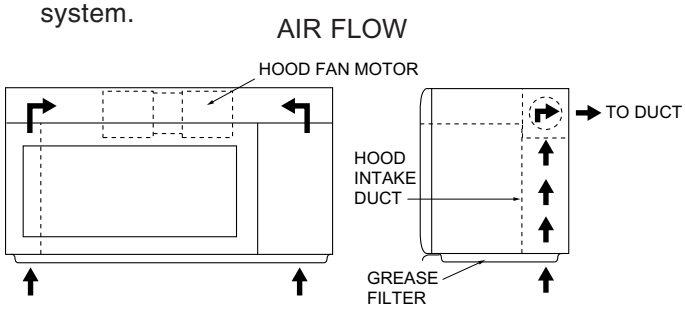
The COMPU DEFROST key is a special function key to defrost meats and poultry faster and better. COMPU DEFROST automatically defrosts roast beef, etc.. Touch the COMPU COOK pad and number pad to select menu and enter the food weight by touching the number pads. When the START pad is touched, the oven will cook according to the special cooking sequence.

VENTILATION METHODS HOT AIR EXHAUST

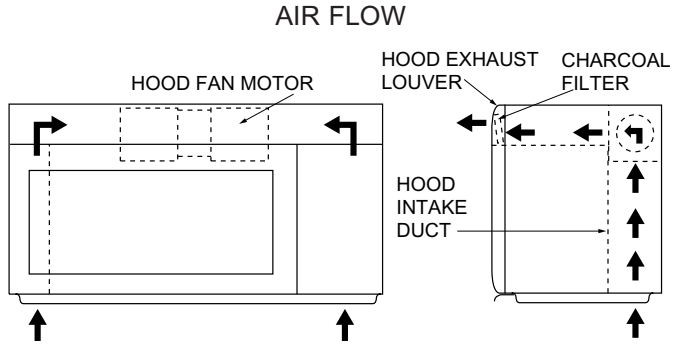
1. VERTICAL VENTING
   For this venting method, hot air rising from the conventional range below is drawn in by the hood fan motor through the grease filters at the right and left sides of the base cover, up through the right and left sides of the oven cavity, then discharged vertically at rear center top of the oven, into the customer's vent system.



2. HORIZONTAL VENTING
   The air handing is the same as VERTICAL VENTING except that the final air discharge is directed horizontally out from the top rear of the oven into the customer's vent system.



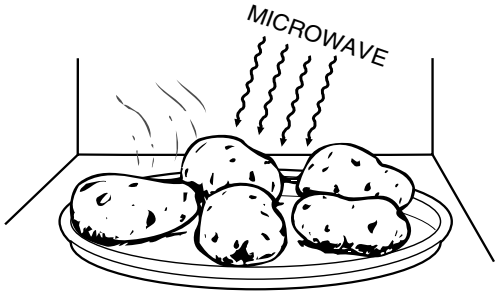
3. RE-CIRCULATION (INSIDE VENTING)
   The air handing is the same as VERTICAL VENTING except that the final air discharge is directed horizontally through the upper front of the oven into the kitchen. IN this case, the accessory charcoal filter RK-230 must be provided to filter the air before it leaves the oven.



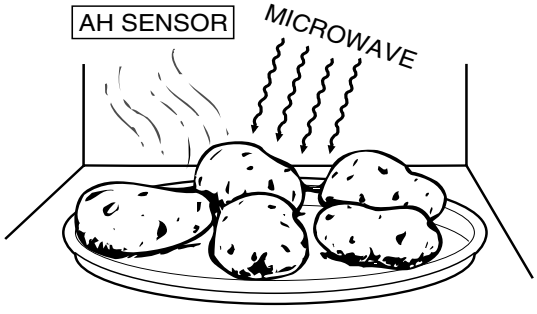
SENSOR COOKING CONDITION

Using the SENSOR function, food is cooked without figuring time, power level or quantity. When the oven senses enough steam from the food, it relays the information to its microprocessor which will calculate the remaining cooking time and power level needed for best results. When the food is cooked, water vapor is developed. the sensor "senses" the vapor and its resistance increase gradually. When the resistance reaches the value set according to the menu, supplementary cooking is started.
The time of supplementary cooking is determined by experiment with each food category and inputted into the LSI. An example of how sensor works: (Potatoes)

1. Potatoes at room temperature. Vapor is emitted very slowly.



2.Heat Potatoes. Moisture and humidity is emitted very rapidly. You can smell the aroma as it cooks.



Cooking Sequence.

1. Touch one of the Sensor Cooking pads. And then touch START/TOUCH ON pad.

NOTE: The oven should not be operated on Sensor Cooking immediately after plugging in the unit. Wait two minutes before cooking on Sensor Cooking.

2. The coil of shut-off relays (RY1 and RY3) are energized, the oven lamp, turntable motor and cooling fan motor are turned on, but the power transformer is not turned on.
3. After about 32 seconds, the cook relay (RY2) is energized. The power transformer is turned on, microwave energy is produced and first stage is started.

any vapor from the oven cavity and sensor.

NOTE: During this first stage, do not open the door or touch STOP/CLEAR pad.

4. When the sensor detects the vapor emitted from the food, the display switches over to the remaining cooking time and the timer counts down to zero. At this time, the door may be opened to stir food, turn it or season, etc.
5. When the timer reaches zero, an audible signal sounds.The shut-off relay and cook relay are de-energized and the power transformer, oven lamp, etc. are turned off.
6. Opening the door or touching the STOP/CLEAR pad, the time of day will reappear on the display and the oven will revert to an OFF condition.

SCHEMATIC
NOTE: CONDITION OF OVEN
1. DOOR CLOSED
2. CLOCK APPEARS ON DISPLAY

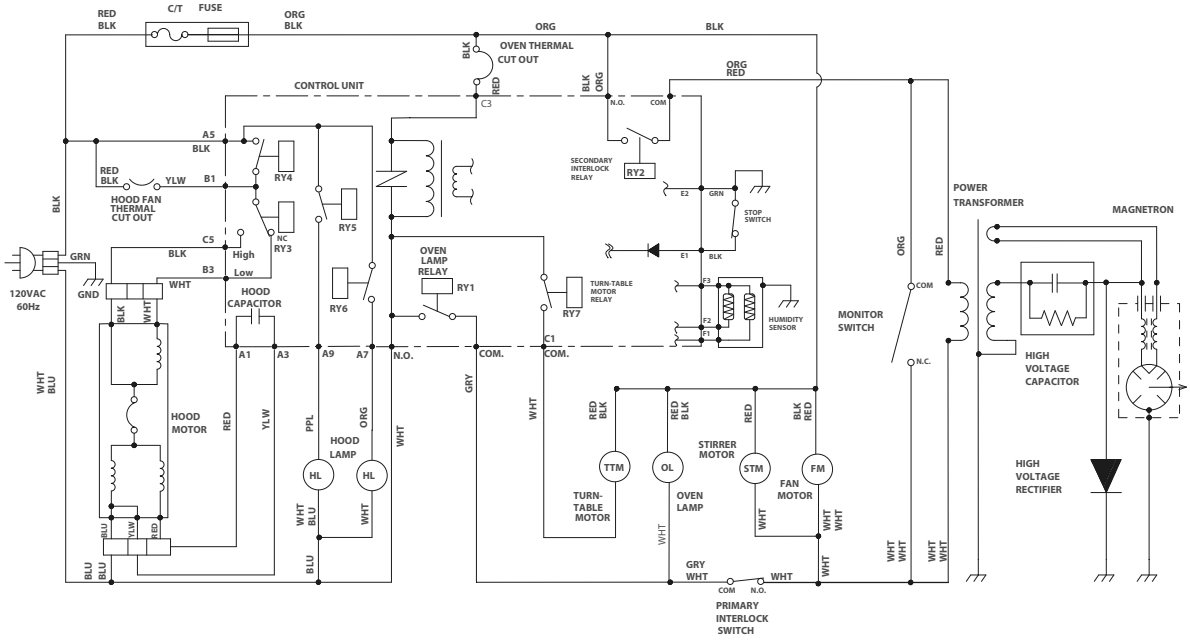


Figure O-1. Oven Schematic-Off Condition

SCHEMATIC
NOTE: CONDITION OF OVEN
1. DOOR CLOSED
2. COOKING TIME PROGRAMMED
3. VARIABLE COOKING CONTROL "HIGH"
4. "START" PAD TOUCHED

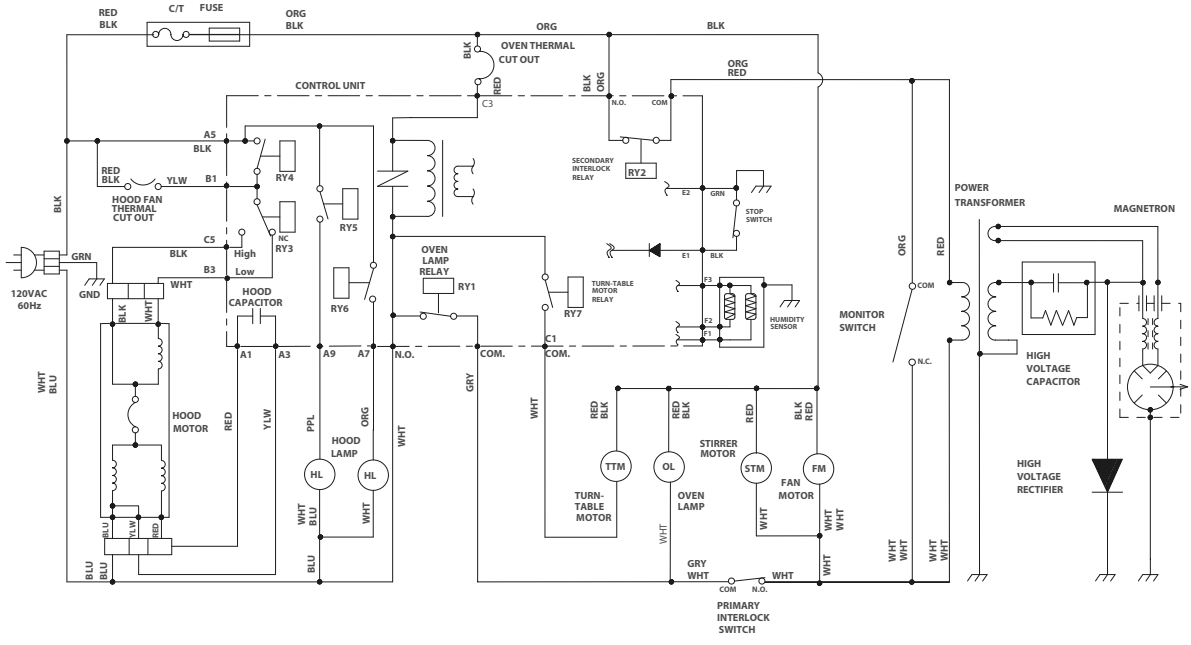


Figure O-2. Oven Schematic-Cooking Condition

DESCRIPTION AND FUNCTION OF COMPONENTS

DOOR OPEN MECHANISM

The door is opened by pulling the door handle, refer to the Figure D-1.

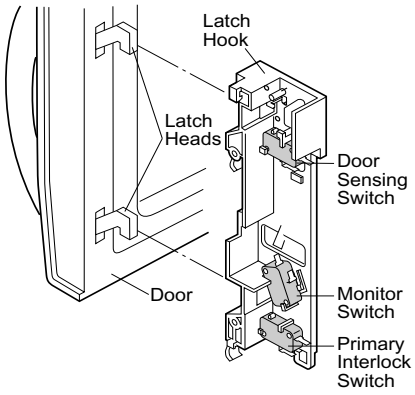


Figure D-1. Door Open Mechanism

DOOR SENSING SWITCH, PRIMARY INTERLOCK SWITCH

The primary interlock switch is mounted in the lower position of the latch hook, the door sensing switch in the primary interlock system is mounted in the upper position of the latch hook is mounted on upper position of the latch hook. They are activated by the latch heads on the door. When the door is opened, the switches interrupt the circuit to all components. A cook cycle cannot take place until the door is firmly closed thereby activating both interlock switches. The primary interlock system consists of the door sensing switch and secondary interlock relay located on the control circuit board.

MONITOR SWITCH

The monitor switch is activated (the contacts opened) by the latch head on the door while the door is closed. The switch is intended to render the oven inoperative by means of blowing the C/T fuse when the contacts of the secondary interlock relay (RY2) and primary interlock switch fail to open when the door is opened.

Functions:

1. When the door is opened, the monitor switch contact close (to the ON condition) due to their being normally closed. At this time the secondary interlock relay (RY2), primary interlock switch are in the OFF condition (contacts open) due to their being normally open contact switches. And the contacts of relay (RY1) are in the ON condition (contacts close).
2. As the door goes to a closed position, the monitor switch contacts are first opened and then the door sensing switch and the primary interlock switch contacts close. (On opening the door, each of these switches operate inversely.)
3. If the door is opened, and the secondary interlock relay (RY2) and primary interlock switch contacts fail to open, the C/T fuse blows simultaneously with closing of the monitor switch contacts.

CAUTION: BEFORE REPLACING A BLOWN C/T FUSE TEST THE DOOR SENSING SWITCH, SECONDARY INTERLOCK RELAY (RY2), PRIMARY INTERLOCK SWITCH AND MONITOR SWITCH FOR PROPER OPERATION. (REFER TO CHAPTER "TEST PROCEDURE").

NOTE: C/T FUSE, MONITOR SWITCH AND PRIMARY INTERLOCK SWITCH ARE REPLACED AS AN ASSEMBLY

THERMAL CUT-OUT (HOOD)

This thermal cut-out located on the right base plate. It is designed to automatically turn on the hood fan motor whenever the hot air rising from the conventional range below causes the temperature at the thermal cut-out to rise to 140^{O}F (60^{O}C) or higher, thus removing this hot air from around microwave oven. When the temperature around the thermal cut-out drops to 113^{O}F (45^{O}C) or lower, the thermal cut-out shuts off the hood fan motor.

THERMAL CUT-OUT (CAVITY)

This thermal cut-out is located on the top of the oven cavity. It is designed to prevent damage to the oven unit if the food in the oven catches fire due to overheating produced by improper setting of cooking time or failure of control unit. Under normal operation, the thermal cut-out remains closed. However, the thermal cut-out will open at 293^{O}F (145^{O}C) causing the oven to shut down.

TURNTABLE MOTOR

The turntable motor rotates the turntable located on the bottom of the oven cavity, so that the foods on the turntable cook evenly during cooking. Turntable will turn in either direction. The turntable motor can be turned off by touching TURNTABLE ON/OFF pad.

COOLING FAN MOTOR

The cooling fan motor drives a blade which draws external cool air. This cool air is directed through the air vanes surrounding the magnetron and cools the magnetron. This air is channelled through the oven cavity to remove steam and vapors given off from the heating foods. It is then exhausted through the exhausting air vents at the oven cavity.

HOOD FAN MOTOR

The hood fan motor is a two-speed, single-phase, double pole induction type, requiring a hood fan capacitor. It is located outside the upper rear part of the oven cavity, is to remove, from around the oven, hot air rising from the conventional electric or gas range over which it is installed. This air is then expelled either vertically or horizontally through the customer supplied duct system, or discharged back into the kitchen.

STIRRER MOTOR

The stirrer motor drives the stirrer fan to stir the microwave radiation from the waveguide.

HOOD LAMP

The hood lamps are mounted at the hood lamp angle on the base cover. The hood lamps can be turned off and on by touching the WORK LIGHT pad or the NIGHT LIGHT pad. And also the brightness can be varied to high or low by touching the WORK LIGHT pad or the NIGHT LIGHT pad.

TROUBLESHOOTING GUIDE

Never touch any part in the circuit with your hand or an uninsulated tool while the power supply is connected.

When troubleshooting the microwave oven, it is helpful to follow the Sequence of Operation in performing the checks. Many of the possible causes of trouble will require that a specific test be performed. These tests are given a procedure letter which will be found in the "Test Procedure "section.

IMPORTANT: If the oven becomes inoperative because of a blown C/T fuse, check the monitor switch, relay (RY1) secondary interlock relay (RY2), door sensing switch , primary interlock switch before replacing the C/T fuse. If C/T fuse is replaced, the monitor switch and primary interlock switch must also be replaced. Use part FFS-BA019/KiT as an assembly.

IMPORTANT: Whenever troubleshooting is performed with the power supply cord disconnected. It may in, some cases, be necessary to connect the power supply cord after the outer case has been removed, in this event,

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the leads to the primary of the power transformer.
5. Ensure that the leads remain isolated from other components and oven chassis by using insulation tape.
6. After that procedure, reconnect the power supply cord.

When the testing is completed

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Reconnect the leads to the primary of the power transformer.
5. Reinstall the outer case (cabinet).
6. Reconnect the power supply cord after the outer case is installed.
7. Run the oven and check all functions.

CK = Check / RE = Replace

| TEST PROCEDURE | | |

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

A **MAGNETRON ASSEMBLY TEST**

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. To test for an open filament, isolate the magnetron from the high voltage circuit. A continuity check across the magnetron filament leads should indicate less than 1 ohm.
5. To test for a shorted magnetron, connect the ohmmeter leads between the magnetron filament leads and chassis ground. This test should indicate an infinite resistance. If there is little or no resistance the magnetron is grounded and must be replaced.
6. Reconnect all leads removed from components during testing.
7. Reinstall the outer case (cabinet).
8. Reconnect the power supply cord after the outer case is installed.
9. Run the oven and check all functions.

MICROWAVE OUTPUT POWER

The following test procedure should be carried out with the microwave oven in a fully assembled condition (outer case fitted).

HIGH VOLTAGES ARE PRESENT DURING THE COOK CYCLE, SO EXTREME CAUTION SHOULD BE OBSERVED.

Power output of the magnetron can be measured by performing a water temperature rise test. This test should only be used if above tests do not indicate a faulty magnetron and there is no defect in the following components or wiring: silicon rectifier, high voltage capacitor and power transformer. This test will require a 16 ounce (453cc) measuring cup and an accurate mercury thermometer or thermocouple type temperature tester. For accurate results, the following procedure must be followed carefully:

1. Fill the measuring cup with 16 oz. (453cc) of tap water and measure the temperature of the water with a thermometer or thermocouple temperature tester. Stir the thermometer or thermocouple through the water until the temperature stabilizes. Record the temperature of the water.
2. Place the cup of water in the oven. Operate oven at POWER 10(HIGH) selecting more than 60 seconds cook time. Allow the water to heat for 60 seconds, measuring with a stop watch, second hand of a watch or the digital read-out countdown.
3. Remove the cup from the oven and again measure the temperature, making sure to stir the thermometer or thermocouple through the water until the maximum temperature is recorded.
4. Subtract the cold water temperature from the hot water temperature. The normal result should be 29.2 to 54.2^{O}F(16.2 to 30.1^{O}C) rise in temperature. If the water temperatures are accurately measured and tested for the required time period the test results will indicate if the magnetron tube has low power output (low rise in water temperature) which would extend cooking time or high power output (high rise in water temperature) which would reduce cooking time. Because cooking time can be adjusted to compensate for power output, the magnetron tube assembly should be replaced only if the water temperature rise test indicates a power output well beyond the normal limits. The test is only accurate if the power supply line voltage is 120 volts and the oven cavity is clean.

B **POWER TRANSFORMER TEST**

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the primary input terminals and measure the resistance of the transformer with an ohmmeter. Check for continuity of the coils with an ohmmeter. On the R x 1 scale, the resistance of the primary coil should be less than 1 ohm and the resistance of the high voltage coil should be approximately 83.2 ohms; the resistance of the filament coil should be less than 1 ohm.
5. Reconnect all leads removed from components during testing.
6. Reinstall the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST
	(HIGH VOLTAGES ARE PRESENT AT THE HIGH VOLTAGE TERMINAL, SO DO NOT ATTEMPT TO MEASURE THE FILAMENT AND HIGH VOLTAGE.)
C	**HIGH VOLTAGE RECTIFIER TEST** 1. Disconnect the power supply cord, and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. 4. Isolate the rectifier from the circuit. Using the highest ohm scale of the meter, read the resistance across the terminals and observe, reverse the leads to the rectifier terminals and observe meter reading. If a short is indicated in both directions, or if an infinite resistance is read in both directions, the rectifier is probably defective and should be replaced. 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer case (cabinet). 7. Reconnect the power supply cord after the outer case is installed. 8. Run the oven and check all functions. **NOTE: Be sure to use an ohmmeter that will supply a forward bias voltage of more than 6.3 volts.**
D	**HIGH VOLTAGE CAPACITOR TEST** 1. Disconnect the power supply cord, and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. 4. If the capacitor is open, no high voltage will be available to the magnetron. isconnect input leads and check for short or open between the terminals using an ohmmeter. Checking with a high ohm scale, if the high voltage capacitor is normal, the meter will indicate continuity for a short time and should indicate an open circuit once the capacitor is charged. If the above is not the case, check the capacitor with an ohmmeter to see if it is shorted between either of the terminals and case. If it is shorted, replace the capacitor. 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer case (cabinet). 7. Reconnect the power supply cord after the outer case is installed. 8. Run the oven and check all functions.
E	**CAVITY THERMAL CUT-OUT TEST** 1. Disconnect the power supply cord, and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. 4. A continuity check across the thermal cut-out terminals should indicate a closed circuit unless the temperature of the thermal cut-out reaches approximately 293^{O}F(145^{O}C). An open thermal cut-out indicates overheating of the oven, exchange the oven thermal cut-out and check inside of oven cavity and for improper setting of cooking time or operation of control unit. Check for restricted air flow through the vent holes of the oven cavity, especially the cooling fan and air guide. 5. Reconnect all leads removed from components during testing. 6. Reinstall the outer case (cabinet). 7. Reconnect the power supply cord after the outer case is installed. 8. Run the oven and check all functions. **C/T FUSE TEST** 1. Disconnect the power supply cord, and then remove outer case. 2. Open the door and block it open. 3. Discharge high voltage capacitor. 4. A continuity check across the C/T fuse terminals should indicate a closed circuit unless the temperature of the C/T fuse reaches approximately 302^{O}F(150^{O}C). An open C/T fuse indicates overheating of the magnetron. Check for restricted air flow to the magnetron, especially the cooling fan air guide.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

CAUTION: IF THE TEMPERATURE FUSE INDICATES AN OPEN CIRCUIT AT ROOM TEMPERATURE, REPLACE TEMPERATURE FUSE.

5. If the C/T fuse is blown when the door is opened, check the secondary interlock relay, primary interlock switch and monitor switch according to the "TEST PROCEDURE" for those switches before replacing the blown monitor fuse.

CAUTION: BEFORE REPLACING A BLOWN C/T FUSE, TEST THE SECONDARY INTERLOCK RELAY, PRIMARY INTERLOCK SWITCH, DOOR SENSING SWITCH AND MONITOR SWITCH FOR PROPER OPERATION.

If the C/T fuse is blown by improper switch operation, the C/T fuse and monitor switch must be replaced with "C/T fuse and monitor switch assembly" part number FFS-BA019/KIT, even if the monitor switch operates normally. The C/T fuse and monitor switch assembly is comprised of a 20 ampere fuse and switch.

6. Reconnect all leads removed from components during testing.
7. Reinstall the outer case (cabinet).
8. Reconnect the power supply cord after the outer case is installed.
9. Run the oven and check all functions.

F **PRIMARY INTERLOCK SWITCH TEST**

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Isolate the switch and connect the ohmmeter to the common (COM.) and normally open (NO) terminal of the switch. The meter should indicate an open circuit with the door open and a closed circuit with the door closed. If improper operation is indicated, replace the secondary interlock switch.
5. Reconnect all leads removed from components during testing.
6. Reinstall the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.

G **PRIMARY INTERLOCK SYSTEM TEST**

DOOR SENSING SWITCH

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Isolate the switch and connect the ohmmeter to the common (COM.) and normally open (NO) terminal of the switch. The meter should indicate an open circuit with the door open and a closed circuit with the door closed. If improper operation is indicated, replace the door sensing switch.
5. Reconnect all leads removed from components during testing.
6. Reinstall the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.

NOTE: If the door sensing switch contacts fail in the open position and the door is closed, the cooling fan motor, stirrer motor and oven light will be activated by RY1.

SECONDARY INTERLOCK RELAY (RY2)

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect two (2) wire leads from the male tab terminals of the Secondary Interlock Relay. Check the state of the relay contacts using a ohmmeter. The relay contacts should be open. If the relay contacts are closed, replace the circuit board entirely or the relay itself.
5. Reconnect all leads removed from components during testing.
6. Reinstall the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.

TEST PROCEDURES

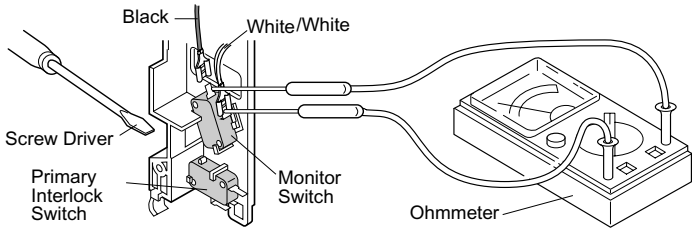
PROCEDURE LETTER	COMPONENT TEST

H **MONITOR SWITCH TEST**

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Before performing this test, make sure that the secondary interlock switch and the primary interlock relay are operating properly, according to the above Switch Test Procedure. Disconnect the wire lead from the monitor switch (COM) terminal. Check the monitor switch operation by using the ohmmeter as follows. When the door is open, the meter should indicate a closed circuit. When the monitor switch actuator is pushed by a screw driver through the lower latch hole on the front plate of the oven cavity with the door opened (in this condition the plunger of the monitor switch is pushed in), the meter should indicate an open circuit. If improper operation is indicated, the switch may be defective. After testing the monitor switch, reconnect the wire lead to the monitor switch (COM) terminal and check the continuity of the monitor circuit.
5. Reconnect all leads removed from components during testing.
6. Reinstall the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.

of the oven cavity with the door opened (in this condition the plunger of the monitor switch is pushed in), the meter should indicate an open circuit. If improper operation is indicated, the switch may be defective. After testing the monitor switch, reconnect the wire lead to the monitor switch (COM) terminal and check the continuity of the monitor circuit.

5. Reconnect all leads removed from components during testing.
6. Reinstall the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.



TEST PROCEDURES

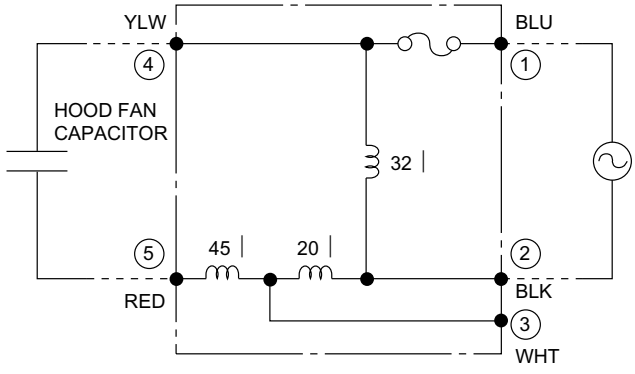
PROCEDURE LETTER	COMPONENT TEST

I HOOD THERMAL CUT-OUT TEST

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. A continuity check across the thermal cut-out terminals should indicate an open circuit unless the temperature of the thermal cut-out reaches approximately 140°F(60°C) or more. At that temperature, the contacts will close. The thermal cut-out opens automatically at approximately 113°F(45°C).
5. Reconnect all leads removed from components during testing.
6. Reinstall the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.

J HOOD FAN MOTOR TEST

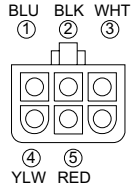
1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. If the motor does not turn, touch the FAN HI / LO pad once (set hood fan motor power "HIGH") and check voltage between pins "1" and "2" (Blue and Black wires) of the 6 pin connector. If 120 Volts appear and the hood capacitor is good, replace the hood fan assembly. If 120 Volts does not appear, check the motor circuit. The resistance values of motor terminals are as follows:



Resistance between;

BLU (1)	AND	YLW (4) =	0Ω (Shorted)
BLK (2)	AND	YLW (4) =	32Ω
BLU (1)	AND	BLK (2) =	32Ω
BLK (2)	AND	WHT (3) =	20Ω
WHT (3)	AND	RED (5) =	45Ω

6-PIN CONNECTOR
OF HOOD FAN MOTOR



5. Reconnect all leads removed from components during testing.
6. Reinstall the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

K **TOUCH CONTROL PANEL ASSEMBLY TEST**

The touch control panel consists of circuits including semiconductors such as LSI, ICs, etc. Therefore, unlike conventional microwave ovens, proper maintenance cannot be performed with only a voltmeter and ohmmeter.
In this service manual, the touch control panel assembly is divided into two units, Control Unit and Key Unit, and also the Control Unit is divided into two units, LSI Unit and Power Unit, and troubleshooting by unit replacement is described according to the symptoms indicated.

Before testing,

1) Disconnect the power supply cord, and then remove outer case. Refer to procedure of "HOOD EXHAUST LOUVER REMOVAL", "REMOVAL OF OVEN FROM WALL" and "OUTER CASE REMOVAL".
2) Open the door and block it open.
3) Discharge high voltage capacitor.
4) Disconnect the leads to the primary of the power transformer.
5) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
6) After that procedure, re-connect the power supply cord.

1. Key Unit.
   NOTE ;
   1) Disconnect the power supply cord, and then remove outer case.
   2) Open the door and block it open.
   3) Discharge high voltage capacitor.
   4) Check key unit ribbon connection before replacement.
   5) Reconnect all leads removed from components during testing.
   6) Re-install the outer case (cabinet).
   7) Reconnect the power supply cord after the outer case is installed.
   8) Run the oven and check all functions.

   The following symptoms indicate a defective key unit.
   a) When touching the pads, a certain pad produces no signal at all.
   b) When touching a number pad, two figures or more are displayed.
   c) When touching the pads, sometimes a pad produces no signal.

   If the key unit is defective.
   1) Disconnect the power supply cord, and then remove outer case.
   2) Open the door and block it open.
   3) Discharge high voltage capacitor.
   4) Replace the key unit.
   5) Reconnect all leads removed from components during testing.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

6) Re-install the outer case (cabinet).
7) Reconnect the power supply cord after the outer case is installed.
8) Run the oven and check all functions.

2. Control Unit.
The following symptoms indicate a defective control unit. Before replacing the control unit, perform the Key unit test (Procedure M) to determine if control unit is faulty.

2-1 In connection with pads.
a) When touching the pads, a certain group of pads do not produce a signal.
b) When touching the pads, no pads produce a signal.

2-2 In connection with indicators
a) At a certain digit, all or some segments do not light up.
b) At a certain digit, brightness is low.
c) Only one indicator does not light.
d) The corresponding segments of all digits do not light up; or they continue to light up.
e) Wrong figure appears.
f) A certain group of indicators do not light up.
g) The figure of all digits flicker.

2-3 Other possible problems caused by defective control unit.
a) Buzzer does not sound or continues to sound.
b) Clock does not operate properly.
c) Cooking is not possible.

When testing is completed,
1) Disconnect the power supply cord, and then remove outer case.
2) Open the door and block it open.
3) Discharge high voltage capacitor.
4) Reconnect all leads removed from components during testing.
5) Re-install the outer case (cabinet).
6) Reconnect the power supply cord after the outer case is installed.
7) Run the oven and check all functions.

L **KEY UNIT TEST**

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. If the display fails to clear when the STOP/CLEAR pad is depressed, first verify the flat ribbon cable is making good contact, verify that the door sensing switch (stop switch) operates properly; that is the contacts are closed when the door is closed and open when the door is open. If the door sensing switch (stop switch) is good, disconnect the flat ribbon cable that connects the key unit to the control unit and make sure the door sensing switch is closed (either close the door or short the door sensing switch connecter). Use the Key unit matrix indicated on the control panel schematic and place a jumper wire between the pins that correspond to the STOP/CLEAR pad making momentary contact. If the control unit responds by clearing with a beep the key unit is faulty and must be replaced. If the control unit does not respond, it is faulty and must be replaced. If a specific pad does not respond, the above method may be used (after clearing the control unit) to determine if the control unit or key pad is at fault.
5. Reconnect all leads removed from components during testing.
6. Re-install the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.

	G5	G6	G7	G8	G9	G10	G11	G12
G4	0	9	8	7	Beverage	Baked Potato	Sensor Reheat	6
G3	Fan HI / LO	Auto Fan	Help	Poultry	Fish	Memory Cook	Rice	Clock
G2	Night Light	Dinner Items	Lunch Items	Breakfast Items	Auto Defrost	Work Light	Turntable On / Off	Timer / Pause
G1	Clear Off	START	Frozen Snacks	Frozen Entrees	Frozen Veggie	Power Level	Ground Meats	Plus 1 Min
G13	5	4	3	2	Speed Defrost	1	Fresh Veggie	Popcorn

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

M **RELAY TEST**

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the leads to the primary of the power transformer.
5. Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
6. After that procedure, re-connect the power supply cord.
7. Remove the outer case and check voltage between Pin No. 7 of the 4 pin connector (A) and the common terminal of the relay RY1 on the control unit with an A.C. voltmeter.
   The meter should indicate 120 volts, if not check oven circuit.

RY1 and RY2 Relay Test

These relays are operated by D.C. voltage

Check voltage at the relay coil with a D.C. voltmeter during the microwave cooking operation.

DC. voltage indicated ..... Defective relay.

DC. voltage not indicated ..... Check diode which is connected to the relay coil. If diode is good, control unit is defective.

RELAY SYMBOL	OPERATIONAL VOLTAGE	CONNECTED COMPONENTS
RY1	Approx. 24.0V D.C.	Oven lamp / Fan motor / Stirrer motor
RY2(COOK)	Approx. 24.0V D.C.	Power transformer
RY3	Approx. 24.0V D.C.	Turntable motor
RY4	Approx. 24.0V D.C.	Hood motor
RY5	Approx. 24.0V D.C.	Hood motor (HIGH /LOW selection)

8. Disconnect the power supply cord, and then remove outer case.
9. Open the door and block it open.
10. Discharge high voltage capacitor.
11. Reconnect all leads removed from components during testing.
12. Re-install the outer case (cabinet).
13. Reconnect the power supply cord after the outer case is installed.
14. Run the oven and check all functions.

N **COMPU DEFROST TEST**

(1) Place one cup of water in the center of the turntable tray in the oven cavity.
(2) Close the door, touch the " Auto Defrost " pad twice and touch the Number pad "5". And then touch the "START" pad.
(3) The oven is in Compu Defrost cooking condition.
(4) The oven will operate as follows

WEIGHT	1ST STAGE		2ND STAGE		3RD STAGE		4TH STAGE	
	LEVEL	TIME	LEVEL	TIME	LEVEL	TIME	LEVEL	TIME
0.5lbs	70%	30sec.	50%	30sec.	40%	30sec.	30%	30sec.

(5) If improper operation is indicated, the control unit is probably defective and should be checked.

O **FOIL PATTERN ON THE PRINTED WIRING BOARD TEST**

To protect the electronic circuits, this model is provided with a fine foil pattern added to the primary on the PWB, this foil pattern acts as a fuse.

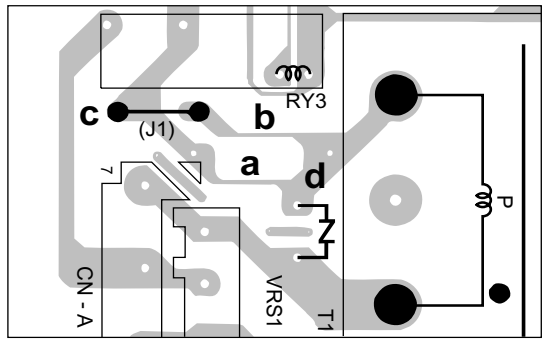
1. Foil pattern check and repairs.
   1) Disconnect the power supply cord, and then remove outer case.
   2) Open the door and block it open.
   3) Discharge high voltage capacitor.
   4) Follow the troubleshooting guide given below for repair.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

STEPS	OCCURRENCE	CAUSE OR CORRECTION
1	Only pattern at "a" is broken.	*Insert jumper wire J1 and solder.
2	Pattern at "a" and "b" are broken.	*Insert the coil RCILF2003YAZZ between "c" and "d".

5) Make a visual inspection of the varistor. Check for burned damage and examine the transformer with a tester for the presence of layer short-circuit (check the primary coil resistance which is approximately 780ý ± 10%). If any abnormal condition is detected, replace the defective parts.



6) Reconnect all leads removed from components during testing.
7) Re-install the outer case (cabinet).
8) Reconnect the power supply cord after the outer case is installed.
9) Run the oven and check all functions.

2. Follow the troubleshooting guide given below, if indicator does not light up after above check and repairs are finished.
   1) Disconnect the power supply cord, and then remove outer case.
   2) Open the door and block it open.
   3) Discharge high voltage capacitor.
   4) Disconnect the leads to the primary of the power transformer.
   5) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
   6) After that procedure, re-connect the power supply cord.
   7) Follow the troubleshooting guide given below for repair.

STEPS	OCCURRENCE	CAUSE OR CORRECTION
1	The rated AC voltage is not present between Pin No. 7 of the 4-pin connector (A) and the common terminal of the relay RY1.	Check supply voltage and oven power cord.
2	The rated AC voltage is present at primary side of low voltage transformer.	Low voltage transformer or secondary circuit defective. Check and repair.

   8) Disconnect the power supply cord, and then remove outer case.
   9) Open the door and block it open.
   10) Discharge high voltage capacitor.
   11) Reconnect all leads removed from components during testing.
   12) Re-install the outer case (cabinet).
   13) Reconnect the power supply cord after the outer case is installed.
   14) Run the oven and check all functions.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

P **AH SENSOR TEST**

Checking the initial sensor cooking condition

WARNING : The oven should be fully assembled before following procedure.

(1) The oven should be plugged in at least two minutes before sensor cooking.

(2) Room temperature should not exceed 95°F (35°C).

(3) The unit should not be installed in any area where heat and steam are generated. The unit should not be installed, for example, next to a conventional surface unit. Refer to the "INSTALLATION INSTRUCTIONS" of the operation manual.

(4) Exhaust vents are provided on the back of the unit for proper cooling and air flow in the cavity. To permit adequate ventilation, be sure to install so as not to block these vents. There should be some space for air circulation.

(5) Be sure the exterior of the cooking container and the interior of the oven are dry. Wipe off any moisture with a dry cloth or paper towel.

(6) The Sensor works with food at normal storage temperature. For example, chicken pieces would be at refrigerator temperature and canned soup at room temperature.

(7) Avoid using aerosol sprays or cleaning solvents near the oven while using Sensor settings. The sensor will detect the vapour given of by the spray and turn off before food is properly cooked.

(8) If the sensor has not detected the vapour of the food, ERROR will appear and the oven will shut off.

Water load cooking test

WARNING : The oven should be fully assembled before following procedure.

Make sure the oven has been plugged in at least two minutes before checking sensor cook operation.

The cabinet should be installed and screws tightened.

(1) Fill approximately 200 milliliters (7.2 oz) of tap water in a 1000 milliliter measuring cup.

(2) Place the container on the center of tray in the oven cavity.

(3) Close the door.

(4) Touch Sensor reheat pad once and touch the Start pad, Now, the oven is in the sensor cooking condition and "SENSOR REHEAT" and "COOK" will appear in the display.

(5) The oven will operate for the first 16 seconds, without generating microwave energy.

NOTE: ERROR will appear if the door is opened or Clear/Off pad is touched during first stage of sensor cooking.

(6) After approximately 32 seconds, microwave energy is produced, and the display should start to count down the remaining cooking time and oven should turn off after water is boiling (bubbling).

If the oven does not turn off, replace the AH sensor or check the control unit, refer to explanation below.

TESTING METHOD FOR AH SENSOR AND/OR CONTROL UNIT

To determine if the sensor is defective, the simplest method is to replace it with a new replacement sensor.

(1) Disconnect the power supply cord, and then remove outer case.

(2) Open the door and block it open.

(3) Discharge high voltage capacitor.

(4) Remove the AH sensor.

(5) Install the new AH sensor.

(6) Reconnect all leads removed from components during replacing.

(7) Re-install the outer case (cabinet).

(8) Reconnect the power supply cord after the outer case is installed.

(9) Reconnect the oven to the power supply cord and check the sensor cook operation proceed as follows:

9-1. Fill approximately 200 milliliters (7.2 oz) of tap water in a 1000 milliliter measuring cup.

9-2. Place the container on the center of tray in the oven cavity.

9-3. Close the door.

9-4. Touch Sensor reheat pad once and touch the Start pad.

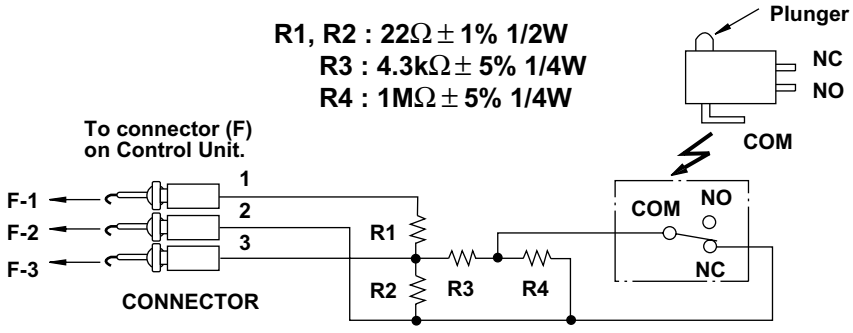
9-5. The control panel is in automatic Sensor operation.

9-6. The display will start to count down the remaining cooking time, and the oven will turn off automatically after the water is boiling (bubbling).

If new sensor dose not operate properly, the problem is with the control unit, and refer to explanation below.

CHECKING CONTROL UNIT

(1) Disconnect the power supply cord, and then remove outer case.
(2) Open the door and block it open.
(3) Discharge high voltage capacitor.
(4) Disconnect the sensor connector that is mounted to control panel.
(5) Then connect the dummy resistor circuit (see fig.) to the sensor connector of control panel.
(6) Disconnect the leads to the primary of the power transformer.
(7) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
(8) After that procedure, re-connect the supply.
(9) Check the sensor cook operation proceed as follows:
9-1. Touch Sensor reheat pad once and touch the Start pad.
9-2. The control panel is in the sensor cooking operation.
9-3. After approximately 32 seconds, push plunger of select switch for more than 3 seconds. This condition is same as judgement by AH sensor.
9-4. After approximately 3 seconds, the display shows " X X . X X " which is the remaining cooking time, and the display count down.
If the above is not the case, the control unit is probably defective.
If the above is proper, the AH sensor is probably defective.
(10) Disconnect the power supply cord, and then remove outer case.
(11) Open the door and block it open.
(12) Discharge high voltage capacitor.
(13) Disconnect the dummy resistor circuit from the sensor connector of control panel.
(14) Carry out necessary repair.
(15) Reconnect all leads removed from components during testing and repairing.
(16) Re-install the outer case (cabinet).
(17) Reconnect the power supply cord after the outer case installed. Run the oven and check all function.
(18) Carry out "Water load cooking test" again and ensure that the oven works properly.



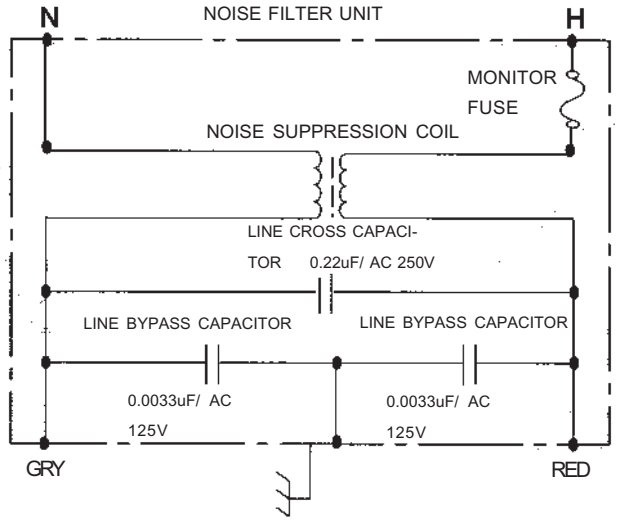
Sensor Dummy Resistor Circuit

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

P **NOISE FILTER TEST**

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the leads to the primary of the power transformer.
5. Using an ohm-meter, check between the terminals as described in the following table:



MEASURING POINT	INDICATION OF OHM-METER
Between N and H	Open Circuit
Between terminal N and GRY	Short Circuit
Between terminal H and RED	Short Circuit

If incorrect readings are obtained, replace the noise filter.

6. Reconnect all leads removed from components during testing.
7. Re-install the outer case (cabinet).
8. Reconnect the power supply cord after the outer case is installed.
9. Run the oven and check all functions.

TOUCH CONTROL PANEL ASSEMBLY

OUTLINE OF TOUCH CONTROL PANEL

The touch control section consists of the following units as shown in the touch control panel circuit.

(1) Key Unit
(2) Control Unit (The Control unit consists of LSI Unit and Power U nit)

The principal functions of these units and the signals communicated among them are explained below.

Key Unit
The key unit is composed of a matrix, signals generated in the LSI are sent to the key unit through P10-P17.
When a key pad is touched, a signal is completed through the key unit and passed back to the LSI through P41, P42, AN8, AN9, AN10 and AN11 to perform the function that was requested.

Control Unit
Control unit consists of LSI, power source circuit, synchronizing signal circuit, ACL circuit, buzzer circuit, relay circuit indicator circuit and back light circuit.

1) LSI
This LSI controls the key strobe signal, relay driving signal for oven function and indicator signal.

2) Power Source Circuit
This circuit generates voltages necessary for the control unit from the AC line voltage.
In addition, the synchronizing signal is available in order to compose a basic standard time in the clock circuit.

Symbol	Voltage	Application
VC	-5.1V	LSI(IC1)

3) Synchronizing Signal Circuit
The power source synchronizing signal is available in order to compose a basic standard time in the clock circuit. It incorporates a very small error because it works on commercial frequency.

4) ACL Circuit
A circuit to generate a signals which resetting the LSI to the initial state when power is applied.

5) Buzzer Circuit
The buzzer is responds to signals from the LSI to emit audible sounds (key touch sound and completion sound).

6) Door Sensing Switch
A switch to inform the LSI if the door is open or closed.

7) Relay Circuit
To drive the magnetron, fan motor, stirrer motor, turntable motor, hood motor, and light the oven lamp and hood lamp.

8) Indicator Circuit
This circuit consists of 40 segments and 16 common electrodes using a Light Crystal Display.
The Light Crystal Display (LCD) is drived by LCD driver IC3.

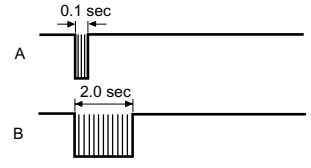
9) Back Light Circuit
A circuit to drive the back light (Light emitting diodes LD1-LD10).

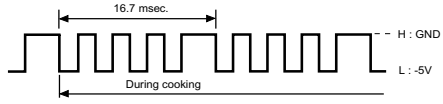
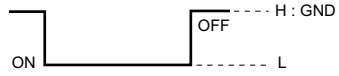
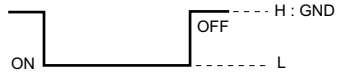
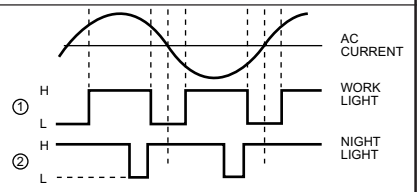
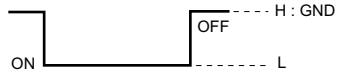
10) Absolute Humidity Sensor Circuit
This circuit detects moisture of the cooking food to allow its automatic cooking.

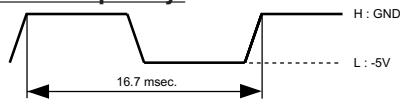
DESCRIPTION OF LSI

LSI(IZA958DR)

The I/O signal of the LSI(IZA958DR) is detailed in the following table.

Pin No.	Signal	I/O	Description
1	AN10	IN	**Signal coming from touch key.** When either G10 line on key matrix is touched, a corresponding signal out of P10, P11, P12, P13, P14 and P17 will be input into AN10. When no key is touched, the signal is held at "H" level.
2	AN11	IN	**Signal similar to AN10.** When either G9 line on key matrix is touched, a corresponding signal will be input into AN11.
3	AVSS	IN	Connected to VC.
4	P10	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to AN9, AN10, AN11, P41 and P42 terminal while one of G8 line keys on key matrix is touched.
5	P11	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to AN9, AN10, AN11, P41 and P42 terminal while one of G7 line keys on key matrix is touched.
6	P12	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to AN9, AN10, AN11, P41 and P42 terminal while one of G6 line keys on key matrix is touched.
7	P13	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to AN9, AN10, AN11, P41 and P42 terminal while one of G5 line keys on key matrix is touched.
8	P14	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to AN9, AN10, AN11, P41 and P42 terminal while one of G4 line keys on key matrix is touched.
9	P15	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to AN9, AN10, AN11, P41 and P42 terminal while one of G3 line keys on key matrix is touched.
10	P16	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to AN9, AN10, AN11, P41 and P42 terminal while one of G2 line keys on key matrix is touched.
11	P17	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to AN8, AN9, AN10, AN11, P41 and P42 terminal while one of G1 line keys on key matrix is touched.
12	X1	IN	Connected to GND.
13	X2	OUT	Terminal not used.
14	VSS	IN	**Power source voltage:-5V.** VC voltage of power source circuit input.
15	OSC2	OUT	**Internal clock oscillation frequency control output.** Output to control oscillation input of OSC2.
16	OSC1	IN	**Internal clock oscillation frequency input setting.** The internal clock frequency is set by inserting the ceramic filter oscillation circuit with respect to OSC1 terminal.
17	TEST	IN	Connected to VC.
18	RES	IN	**Auto clear terminal.** Signal is input to reset the LSI to the initial state when power is applied. Temporarily set to "L" level the moment power is applied, at this time the LSI is reset. Thereafter set at "H" level.
19	P20	OUT	**Signal to sound buzzer (2.0kHz).** A: key touch sound. B: Completion sound. 

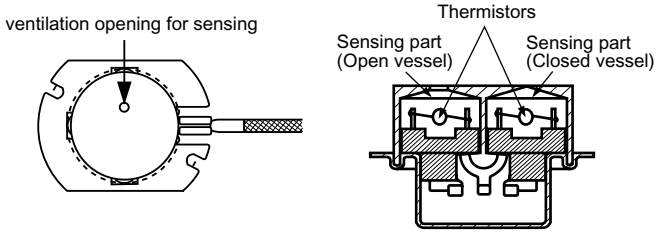
<table>
<tr><th>Pin No.</th><th>Signal</th><th>I/O</th><th>Description</th></tr>
<tr><td>20-22</td><td>P21-P23</td><td>OUT</td><td>Terminal not used.</td></tr>
<tr><td>23</td><td>P24</td><td>OUT</td><td><u>Oven lamp and Fan motor driving signal.</u>
To turn on and off the shut off relay(RY1). The square waveform voltage is delivered to the RY1 driving circuit and RY2 control circuit.
 
</td></tr>
<tr><td>24</td><td>P25</td><td>OUT</td><td><u>Magnetron high-voltage circuit driving signal.</u>
To turn on and off the cook relay(RY2). In P-HI operation, the signals holds "L" level during microwave cooking and "H" level while not cooking. In other cooking modes (P-90,P-80,P-70,P-60,P-50,P-40,P-30,P-20,P-10,P-0) the signal turns to "H" level and "L" level in repetition according to the power level.
<table>
<tr><th>VARI-MODE</th><th>ON TIME</th><th>OFF TIME</th></tr>
<tr><td>P-HI (100% power)</td><td>32 sec.</td><td>0 sec.</td></tr>
<tr><td>P-90 (approx. 90% power)</td><td>30 sec.</td><td>2 sec.</td></tr>
<tr><td>P-80 (approx. 80% power)</td><td>26 sec.</td><td>6 sec.</td></tr>
<tr><td>P-70 (approx. 70% power)</td><td>24 sec.</td><td>8 sec.</td></tr>
<tr><td>P-60 (approx. 60% power)</td><td>22 sec.</td><td>10 sec.</td></tr>
<tr><td>P-50 (approx. 50% power)</td><td>18 sec.</td><td>14 sec.</td></tr>
<tr><td>P-40 (approx. 40% power)</td><td>16 sec.</td><td>16 sec.</td></tr>
<tr><td>P-30 (approx. 30% power)</td><td>12 sec.</td><td>20 sec.</td></tr>
<tr><td>P-20 (approx. 20% power)</td><td>8 sec.</td><td>24 sec.</td></tr>
<tr><td>P-10 (approx. 10% power)</td><td>6 sec.</td><td>26 sec.</td></tr>
<tr><td>P-0 (0% power)</td><td>0 sec.</td><td>32 sec.</td></tr>
</table></td></tr>
<tr><td>25</td><td>P26</td><td>OUT</td><td><u>Hood motor driving signal.</u>
To turn on and off relay(RY4). "L" level: During Hood motor ON. "H" level: During Hood motor OFF.
 
</td></tr>
<tr><td>26</td><td>P27</td><td>OUT</td><td><u>Hood motor high / low driving signal.</u>
To turn on and off relay(RY5). "L" level: During Hood motor high. "H" level: During Hood motor low.
 
</td></tr>
<tr><td>27</td><td>P30</td><td>OUT</td><td><u>Hood lamp driving signal.</u>
To turn on and off solid state relay(SSR1). " ① " level: During Hood lamp ON (WORK LIGHT level). " ② " level: During Hood lamp ON (NIGHT LIGHT level). "H" level: During Hood lamp OFF.
 
</td></tr>
<tr><td>28</td><td>P31</td><td>OUT</td><td><u>Turntable motor driving signal.</u>
To turn on and off relay(RY3). "L" level: During Turntable ON. "H" level: During Turntable OFF or during the oven is off condition.
 
</td></tr>
<tr><td>29</td><td>P32-P37</td><td>OUT</td><td>Terminal not used.</td></tr>
<tr><td>30-34</td><td>P33-P37</td><td>OUT</td><td>Used for initial balancing of the bridge circuit (absolute humidity sensor)</td></tr>
<tr><td>35</td><td>CVCC</td><td>IN</td><td>Connected to GND.</td></tr>
<tr><td>36</td><td>VSS</td><td>IN</td><td><u>Power source voltage:-5V.</u>
The power source voltage to the LSI is input to VSS terminal. Connected to VC.</td></tr>
<tr><td>37-38</td><td>V3-V2</td><td>IN</td><td>Terminal not used.</td></tr>
<tr><td>39-40</td><td>V1-V0</td><td>IN</td><td><u>Power source voltage input terminal.</u>
Standard voltage for LCD. Connected to GND.</td></tr>
<tr><td>41</td><td>VCC</td><td>IN</td><td><u>Power source voltage: GND (0V).</u>
The power source voltage to drive the LSI is input to VCC terminal.</td></tr>
<tr><td>42-45</td><td>COM4-COM1</td><td>OUT</td><td>Terminal not used.</td></tr>
<tr><td>46-65</td><td>SEG1-SEG20</td><td>OUT</td><td>Terminal not used.</td></tr>
<tr><td>66-79</td><td>P74-P91</td><td>OUT</td><td>Data output terminal to LCD driver IC3.</td></tr>
<tr><td>80-85</td><td>SEG35-SEG40</td><td>OUT</td><td>Terminal not used.</td></tr>
<tr><td>86</td><td>P40</td><td>OUT</td><td>Terminal not used.</td></tr>
</table>

Pin No.	Signal	I/O	Description
87	P41	IN	**Signal similar to AN10.** When either G13 line on key matrix is touched, acorresponding signal will be input into P41.
88	P42	IN	**Signal similar to AN10.** When either G12 line on key matrix is touched, acorresponding signal will be input into P42.
89	IRQ0	IN	**Signal synchronized with commercial power source frequency.** This is the basic timing for time processing of LSI. 
90	AVCC	IN	**A/D converter power source voltage.** The power source voltage to drive the A/D converter in the LSI. Connected to GND.
91	AN0	IN	Used for initial balancing of the bridge circuit (absolute humidity sensor). This input is an analog input terminal from the AH sensor circuit, and connected to the A/D converter built into the LSI.
92	AN0-AN1	IN	**AH sensor input.** This input is an analog input terminal from the AH sensor circuit, and connected to the A/D converter built into the LSI.
93	AN2	IN	**To input signal which communicates the door open/close information to LSI.** Door closed; "H" level signal(0V). Door opened; "L" level signal(-5V).
94	AN3	IN	Terminal not used.
95-98	AN4-AN7	IN	**Terminal to change cooking input according to the Model.** By using the A/D converter contained in the LSI, DC voltage in accordance with the Model in operation is applied to set up its cooking constant.
99	AN8	IN	**Input terminal to judge the model.** The signal out of P16 will be input into AN8 through G2 line on key matrix. The LSI will judge the model by this signal.
100	AN9	IN	**Signal similar to AN10.** When either G11 line on key matrix is touched, a corresponding signal will be input into AN9.

ABSOLUTE HUMIDITY SENSOR CIRCUIT

(1) Structure of Absolute Humidity Sensor

The absolute humidity sensor includes two thermistors as shown in the illustration. One thermistor is housed in the closed vessel filled with dry air while another in the open vessel. Each sensor is provided with the protective cover made of metal mesh to be protected from the external airflow.

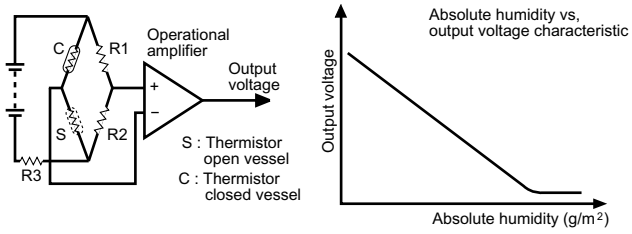


(2) Operational Principle of Absolute Humidity Sensor

The figure below shows the basic structure of an absolute humidity sensor. A bridge circuit is formed by two thermistors and two resistors (R1 and R2).

The output of the bridge circuit is to be amplified by the operational amplifier.

Each thermistor is supplied with a current to keep it heated at about 150°C (302°F), the resultant heat is dissipated in the air and if the two thermistors are placed in different humidity conditions they show different degrees of heat conductivity leading to a potential difference between them causing an output voltage from the bridge circuit, the intensity of which is increased as the absolute humidity of the air increases. Since the output is very minute, it is amplified by the operational amplifier.



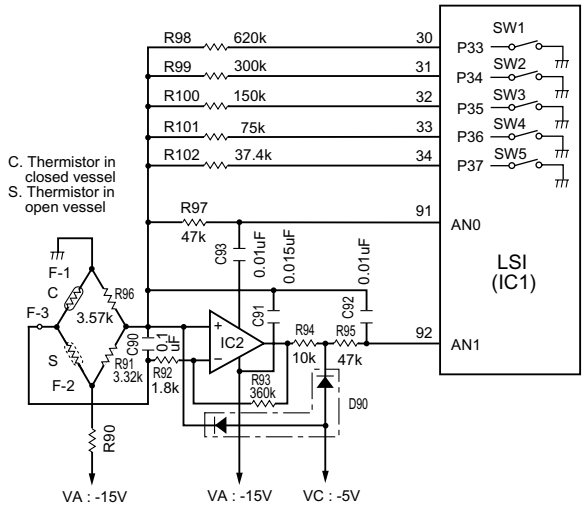
(3) Detector Circuit of Absolute Humidity Sensor Circuit

This detector circuit is used to detect the output voltage of the absolute humidity circuit to allow the LSI to control sensor cooking of the unit. When the unit is set in the sensor cooking mode, 16 seconds clearing cycle occurs than the detector circuit starts to function and the LSI observes the initial voltage available at its AN1 terminal. With this voltage given, the switches SW1 to SW5 in the LSI are turned on in such a way as to change the resistance values in parallel with R98 ~ R102 of IC2. Changing the resistance values results in that there is the same potential at both F-3 terminal of the absolute humidity sensor and AN0 terminal of the LSI. The voltage of AN1 terminal will indicate about -2.5V. This initial balancing is set up about 16 seconds after the unit is put in the Sensor Cooking mode. As the sensor cooking proceeds, the food is heated to generate moisture by which the resistance balance the bridge circuit is deviated to increase the voltage available at AN1 terminal of the LSI.

Then the LSI observes that voltage at AN1 terminal and compares it with its initial value, and when the comparison rate reaches the preset value (fixed for each menu to be cooked), the LSI causes the unit to stop sensor cooking; thereafter, the unit goes in the next operation automatically.

When the LSI starts to detect the initial voltage at AN1 terminal 16 seconds after the unit has been put in the Sensor Cooking mode, if it is not possible to balance, of the bridge circuit due to disconnection of the absolute humidity sensor, ERROR will appear on the display and the cooking is stopped.

1) Absolute humidity sensor circuit



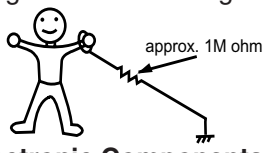
SERVICING

1. Precautions for Handling Electronic Components

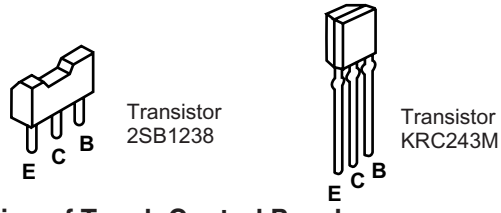
This unit uses CMOS LSI in the integral part of the circuits. When handling these parts, the following precautions should be strictly followed. CMOS LSI have extremely high impedance at its input and output terminals. For this reason, it is easily influenced by the surrounding high voltage power source, static electricity charge in clothes, etc. and sometimes it is not fully protected by the built-in protection circuit.

In order to protect CMOS LSI.

1) When storing and transporting, thoroughly wrap them in aluminium foil. Also wrap all PW boards containing them in aluminium foil.
2) When soldering, ground the technician as shown in the figure and use grounded soldering iron and work table.



2. Shapes of Electronic Components



3. Servicing of Touch Control Panel

We describe the procedures to permit servicing of the touch control panel of the microwave oven and the precautions you must take when doing so. To perform the servicing, power to the touch control panel is available either from the power line of the oven itself or from an external power source.

(1) Servicing the touch control panel with power supply of the oven:

CAUTION:

THE HIGH VOLTAGE TRANSFORMER OF THE MICROWAVE OVEN IS STILL LIVE DURING SERVICING AND PRESENTS A HAZARD.

Therefore, before checking the performance of the touch control panel,

1) Disconnect the power supply cord, and then remove outer case.
2) Open the door and block it open.
3) Discharge high voltage capacitor.
4) Disconnect the leads to the primary of the power transformer.
5) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
6) After that procedure, re-connect the power supply cord.

After checking the performance of the touch control panel,

1) Disconnect the power supply cord.
2) Open the door and block it open.
3) Re-connect the leads to the primary of the power transformer.
4) Re-install the outer case (cabinet).
5) Re-connect the power supply cord after the outer case is installed.
6) Run the oven and check all functions.

A. On some models, the power supply cord between the touch control panel and the oven itself is so short that the two can't be separated. For those models, check and repair all the controls (sensor-related ones included) of the touch control panel while keeping it connected to the oven.

B. On some models, the power supply cord between the touch control panel and the oven proper is long enough that they may be separated from each other. For those models, it is possible to check and repair the controls of the touch control panel while keeping it apart from the oven proper; in this case you must short both ends of the door sensing switch (on PWB) of the touch control panel with a jumper, which activates an operational state that is equivalent to the oven door being closed. As for the sensor-related controls of the touch control panel, checking them is possible if dummy resistor(s) with resistance equal to that of the controls are used.

(2) Servicing the touch control panel with power supply from an external power source:

Disconnect the touch control panel completely from the oven proper, and short both ends of the door sensing switch (on PWB) of the touch control panel, which activates an operational state that is equivalent to the oven door being closed. Connect an external power source to the power input terminal of the touch control panel, then it is possible to check and repair the controls of the touch control panel it is also possible to check the sensor-related controls of the touch control panel by using the dummy resistor(s).

4. Servicing Tools

Tools required to service the touch control panel assembly.

1) Soldering iron: 30W
(It is recommended to use a soldering iron with a grounding terminal.)
2) Oscilloscope: Single beam, frequency range: DC-10MHz type or more advanced model.
3) Others: Hand tools

5. Other Precautions

1) Before turning on the power source of the control unit, remove the aluminium foil applied for preventing static electricity.
2) Connect the connectors of the key unit to the control unit being sure that the lead wires are not twisted.
3) After aluminium foil is removed, be careful that abnormal voltage due to static electricity etc. is not applied to the input or output terminals.
4) Attach connectors, electrolytic capacitors, etc. to PWB, making sure that all connections are tight.
5) Be sure to use specified components where high precision is required.

COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

WARNING AGAINST HIGH VOLTAGE:

Microwave ovens contain circuitry capable of producing very high voltage and current, contact with following parts may result in severe, possibly fatal, electric shock.
(Example)
High Voltage Capacitor, Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness etc..

WARNING: **Avoid possible exposure to microwave energy. Please follow the instructions below before operating the oven.**

1. Disconnect the power supply cord.
2. Visually check the door and cavity face plate for damage (dents, cracks, signs of arcing etc.).

Carry out any remedial work that is necessary before operating the oven.
Do not operate the oven if any of the following conditions exist;
1. Door does not close firmly.
2. Door hinge, support or latch hook is damaged.
3. The door gasket or seal is damaged.
4. The door is bent or warped.
5. There are defective parts in the door interlock system.
6. There are defective parts in the microwave generating and transmission assembly.
7. There is visible damage to the oven.

Do not operate the oven:
1. Without the RF gasket (Magnetron).
2. If the wave guide or oven cavity are not intact.
3. If the door is not closed.
4. If the outer case (cabinet) is not fitted.

WARNING FOR WIRING

To prevent an electric shock, take the following precautions.
1. Before wiring,
   1) Disconnect the power supply cord.
   2) Open the door block it open.
   3) Discharge the high voltage capacitor and wait for 60 seconds.
2. Don't let the wire leads touch to the followiong parts;
   1) High voltage parts:
      Magnetron, High voltage transformer, High voltage capacitor and High voltage rectifier assembly.
   2) Hot parts:
      Oven lamp, Magnetron, High voltage transformer and Oven cavity.
   3) Sharp edge:
      Bottom plate, Oven cavity, Waveguide flange, Chassis support and other metallic plate.
   4) Movable parts (to prevent a fault)
      Fan blade, Fan motor, Switch, Switch lever, Open button.
3. Do not catch the wire leads in the outer case cabinet.
4. Insert the positive lock connector until its pin is locked and make sure that the wire leads do not come off even if the wire leads are pulled.
5. To prevent an error function, connect the wire leads correctly, referring to the Pictorial Diagram.

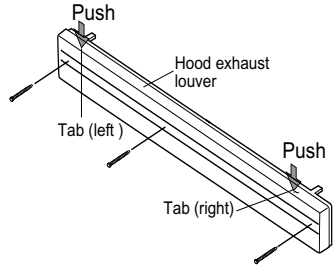
Please refer to 'OVEN PARTS, CABINET PARTS, CONTROL PANAL PARTS, DOOR PARTS', when carrying out any of the following removal procedures:

THE FOLLOWING ADJUSTMENTS OR COMPONENT REPLACEMENT CAN BE PERFORMED WITHOUT REMOVING THE OVEN FROM THE WALL

1. Hood lamps, sockets and grease filter.
2. Oven lamp, base cover and hood lamp glass assembly.
3. Turntable motor.
4. Hood exhaust louver.
5. Control panel assembly or components
6. Stirrer cover and stirrer fan.

HOOD EXHAUST LOUVER REMOVAL

1. Disconnect the power supply cord.
2. Open the door and block it open.
3. Remove the three (3) screw holding the hood exhaust louver to the oven cavity.
4. Pull the hood exhaust louver from the oven cavity by pushing the right and left tabs of the hood exhaust louver



to remove.
5. Remove the louver covers A, B, and C from the hood exhaust louver
6. Now, the hood exhaust louver is free.

REMOVAL OF OVEN FROM WALL (Two persons recommended to remove the oven)

1. Disconnect the power supply cord, and uncoil the power supply cord.
2. Remove the turntable tray and support from the oven cavity.
3. Remove the one (1) screw holding the exhaust damper assembly to the rear stay, and remove the exhaust damper assembly by sliding it backward.
4. Remove the two (2) screws holding the oven (outer case cabinet) to the top cabinet.
5. Remove the hood exhaust louver referring to "HOOD EXHAUST LOUVER REMOVAL".
6. While supporting the front of the oven, unfasten the two (2) unit mounting screws holding the oven to the unit mounting plate.
7. Remove the oven by sliding it into the arms of the unit mounting plate and pull the power cord out of the wall cabinet.
8. The oven is now free and can be placed on the work surface selected for servicing the oven.
9. Installation is the reverse of this procedure.

OUTER CASE REMOVAL

Remove the oven from the wall and proceed as follows;
1. Disconnect the power supply cord.
2. Open the door and block it open.
3. Remove three (3) screws holding the hood exhaust louver to the oven, and pull it forward to remove by pushing the right and left tabs of the hood exhaust louver. (Refer to procedure of "HOOD EXHAUST LOUVER REMOVAL".)
4. Remove four (4) screws holding the rear stay to the hood fan motor or the oven, and remove it.
5. Remove the four (4) screws from the rear of the outer case cabinet.
6. Slide the outer case cabinet back about 1 inch (3 cm) to free it from retaining clips on the cavity face plate.
7. Disconnect the three (3) pin connector of the power supply cord from the wiring harness and remove the power supply cord together with the outer case.
8. Discharge high voltage capacitor.

CAUTION: 1. DISCONNECT OVEN FROM POWER SUPPLY BEFORE REMOVING OUTER CASE.
2. DISCHARGE THE HIGH VOLTAGE CAPACITOR BEFORE TOUCHING ANY OVEN COMPONENTS OR WIRING.

POWER TRANSFORMER REMOVAL

1. Disconnect the power supply cord, remove the oven from wall, and remove outer case. (Refer to procedure of "Removal of Oven from Wall" and "Outer Case Removal".) And proceed as follows.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Remove one (1) screw holding the hood duct to the oven cavity front flange.
5. Disconnect the stop switch harness from the chassis support and disconnect the wire leads from the fan motor.
6. Lift up the fan motor side of the hood duct.
7. Disconnect filament leads of transformer from the magnetron and capacitor.
8. Disconnect high voltage leads of capacitor from the transformer.
9. Disconnect wire leads from transformer.
10. Remove two (2) screws holding the transformer to right base plate.

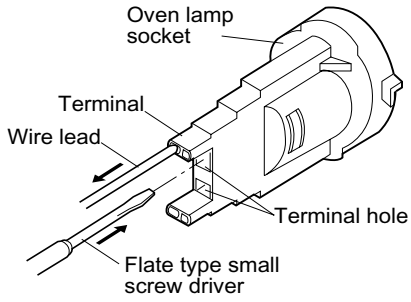
Re-install
1. Install by sliding the transformer on the right base plate with its primary terminals toward the outer case.
2. Secure the transformer with two (2) screws to right base plate.
3. Re-connect wire leads (primary and high voltage) to the transformer and filament leads of transformer to magnetron and high voltage capacitor. Refer to "PICTORIAL DIAGRAM".
4. Re-install the hood duct holding the fan motor to the oven cavity front flange with one (1) screw.
5. Re-connect the wire leads to the chassis support and the fan motor, referring to "PICTORIAL DIAGRAM".
6. Re-install the outer case and check that oven is operating properly.

CAUTION: MAKE SURE THE WIRE LEADS NEVER TOUCH THE FAN BLADE.

HOOD FAN MOTOR, HOOD DUCT, OVEN LAMP SOCKET REMOVAL AND AH SENSOR REMOVAL

1. Disconnect the power supply cord and remove the oven from wall and remove outer case. (Refer to procedure of “Removal of Oven from Wall” and “Outer case Removal” of the base model Service Manual)
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the 6-pin connector of the hood fan motor from the main wire harness located at the right edge of the hood duct and release the snap band from the hood duct.
5. Remove the hood fan motor from the hood duct by lifting it up.
6. Now, the hood fan motor is free.

7. Disconnect the connector CN-F from the control unit.
8. Remove one (1) screw holding the hood duct to the oven cavity front plate.
9. Release the 6-pin connector and the 3-pin connector of the main harness A from the hood duct.
10. Disconnect the wire leads from the fan motor and chassis support, and release the wire leads from holes of the hood duct.
11. Remove the two (2) unit mounting screws from the chassis support (right side) and the hood duct (left side).
12. Remove the one (1) screw holding the chassis support.
13. Remove the chassis support.
14. Remove the hood duct from the oven cavity by lifting it up.
15. Screw the oven lamp off from the lamp socket.
16. Remove the lamp socket from the lamp angle.
17. Pull the wire leads from the oven lamp socket by pushing the terminal hole of the oven lamp socket with a small flat type screw driver.
18. Now, the oven lamp socket is free.
19. Release the harness of the AH sensor assembly from three (3) wire holders of the hood duct.
20. Remove two (2) screws holding the AH sensor assembly to the hood duct.
21. Now, the AH sensor assembly is free.



MAGNETRON REMOVAL

1. Disconnect the power supply cord , remove the oven from wall and remove outer case (Refer to procedure of "Removal of Oven from Wall" and "Outer case Removal".)
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the wire leads from the fan motor and the chassis support, and release them from the holes of hood duct.
5. Remove the one (1) screw holding the hood duct to the oven cavity front plate, and lift up the fan motor side of the hood duct.
6. Remove the one (1) screw holding the capacitor holder to the hood intake duct.
7. Disconnect the high voltage wire leads of the high voltage rectifier assembly from the magnetron.
8. Disconnect the filament lead of the transformer from the magnetron.
9. Remove the power transformer from the right base plate, referring to "POWER TRANSFORMER REMOVAL".
10. Carefully remove four (4) mounting screws holding the magnetron to waveguide. When removing the screws hold the magnetron to prevent it from falling.
11. Remove the magnetron from the unit with care so the magnetron tube should not be hit by any metal object around the tube.
12. Remove the one (1) screw holding the magnetron air guide to the magnetron.
13. Remove the magnetron air guide

CAUTION: WHEN REPLACING THE MAGNETRON, BE SURE THE R.F. GASKET IS IN PLACE AND MOUNTING SCREWS ARE TIGHTENED SECURELY.

HIGH VOLTAGE RECTIFIER AND HIGH VOLTAGE CAPACITOR REMOVAL

1. Disconnect the power supply cord , remove the oven from wall and remove outer case (Refer to procedure of "Removal of Oven from Wall" and "Outer case Removal".)
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the wire leads from the fan motor and the chassis support, and release them from the holes of hood duct.
5. Remove the one (1) screw holding the hood duct to the oven cavity front flange, and lift up the fan motor side of the hood duct.
6. Disconnect the high voltage wire leads with high voltage rectifier from the magnetron.
7. Disconnect filament lead of the transformer from high voltage capacitor.
8. Disconnect high voltage wire from capacitor.
9. Remove one (1) screw holding capacitor holder and high voltage rectifier to the hood intake duct.
10. Disconnect the high voltage rectifier assembly from the high voltage capacitor.
11. Now, the high voltage rectifier assembly is free.
12. Remove capacitor from the holder.
13. Now, the high voltage capacitor is free.

CAUTION: WHEN REPLACING THE HIGH VOLTAGE RECTIFIER ASSEMBLY, THE GROUND SIDE TERMINAL MUST BE SECURED FIRMLY WITH A GROUNDING SCREW.

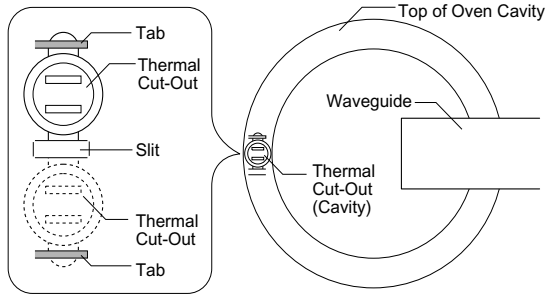
HOOD FAN THERMAL CUT-OUT REMOVAL

1. Disconnect the power supply cord and remove the oven from wall and remove outer case. (Refer to procedure of "Removal of Oven from Wall" and "Outer case Removal")
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the wire leads from the hood fan thermal cut-out.
5. Remove one (1) screw holding the thermal cut-out to the right base plate.
6. Remove the hood fan thermal cut-out from the right base plate.
7. Now, the hood fan thermal cut-out is free.

THERMAL CUT-OUT (CAVITY) REMOVAL

1. Disconnect the power supply cord and remove the oven from wall and remove outer case. (Refer to procedure of "Removal of Oven from Wall" and "Outer case Removal")
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Remove two (2) unit mounting screws.
5. Remove the hood duct. (Refer to the procedure of " HOOD FAN MOTOR, HOOD DUCT AND OVEN LAMP SOCKET REMOVAL".
6. Straighten the tab holding the thermal cut-out to the top plate of the oven cavity.
7 . Release the thermal cut-out (cavity) from the one slit of the oven cavity top plate.
8. Disconnect the wire leads from the thermal cut-out (cavity).
9. Now, the thermal cut-out (cavity) is free.

NOTE: When the tab is broken or turned off, use the another tab which is fixed near the slit when the new thermal cut-out is replaced.



COOLING FAN MOTOR REMOVAL

1. Disconnect the power supply cord, remove the oven from wall and remove outer case (Refer to procedure of "Removal of Oven from Wall" and "Outer case Removal".)
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the wire leads from the fan motor and the chassis support.
5. Remove one (1) screw holding the hood duct to oven cavity.
6. Release the wire leads from the hole of the hood duct.
7. Lift up the fan motor side of the hood duct.
8. Remove the two (2) screws holding the fan motor to the hood duct.
9. Remove the fan blade from the fan motor shaft according the following procedure.
10. Hold the edge of the rotor of the fan motor by using a pair of groove joint pliers.

CAUTION:

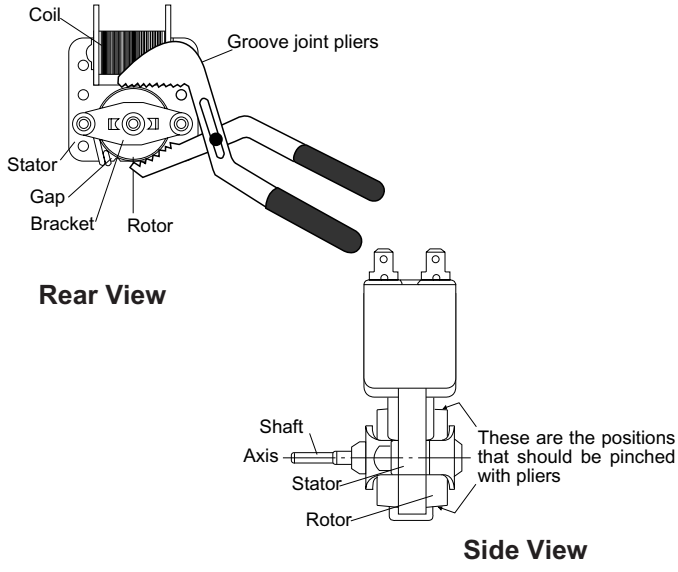
* **Make sure that any pieces do not enter the gap between the rotor and the stator of the fan motor because the rotor is easily shaven by pliers and metal pieces may be produced.**
* **Do not touch the pliers to the coil of the fan motor because the coil may be cut or injured.**
* **Do not disfigure the bracket by touching with the pliers.**

11. Remove the fan blade from the shaft of the fan motor by pulling and rotating the fan blade with your hand.
12. Now, the fan blade will be free.

CAUTION:

* **Do not reuse the removed fan blade because the hole (for shaft) may be larger than normal.**

13. Now, the fan motor is free.



INSTALLATION

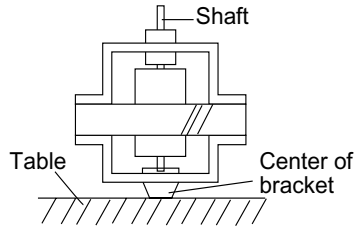
1. Install the fan blade to the fan motor shaft according to the following procedure.

2. Hold the center of the bracket which supports the shaft of the fan motor on the flat table.
3. Apply the screw lock tight into the hole (for shaft) of the fan blade.
4. Install the fan blade to the shaft of fan motor by pushing the fan blade with a small, light weight, ball peen hammer or rubber mallet.
5. Install the fan motor to the hood duct with the two (2) screws.

CAUTION:

* **Do not hit the fan blade strongly when installing because the bracket may be disfigured.**
* **Make sure that the fan blade rotates smooth after installation.**
* **Make sure that the axis of the shaft is not slanted.**

6. Install the hood duct to the oven cavity with the one (1) screw.
7. Re-install the wire leads to the hole of the hood duct.
8. Connect the wire leads to the fan motor and chassis support, referring to the pictorial diagram.
9. Refer to procedure of "OUTER CASE REMOVAL". And reverse their procedure. And re-install the outer case.



TURNTABLE MOTOR REMOVAL

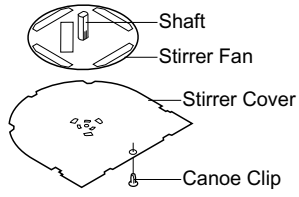
1. Disconnect the power supply cord.
2. Open the door and block it open.
3. Remove the three (3) screws holding the base cover to the oven cavity
4. Remove the base cover from the oven cavity by pulling down and moving to the left slightly.
5. Disconnect the wire leads from the turntable motor.
6. Remove one (1) screw holding turntable motor to the oven cavity.
7. Now the turntable motor is free.

STIRRER MOTOR REMOVAL

1. Disconnect the power supply cord and remove the oven from wall and remove outer case. (Refer to procedure of "Removal of Oven from Wall" and Outer case Removal")
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Remove the hood fan motor and the hood duct from the oven cavity, referring to the procedure of " HOOD FAN MOTOR, HOOD DUCT AND OVEN LAMP SOCKET REMOVAL".
5. Disconnect the wire leads from the stirrer motor.
6. Remove the two (2) screws holding the stirrer motor to the waveguide of the oven cavity.
7. Remove the stirrer motor from the waveguide.
8. Now, the stirrer motor is free.
9. When installing the stirrer motor, the shaft of stirrer motor must be inserted to the stirrer fan shaft. Refer to the procedure of "STIRRER COVER AND STIRRER FAN INSTALLATION".

STIRRER COVER AND STIRRER FAN INSTALLATION

1. Put the stirrer fan on the stirrer cover to match the stirrer fan shaft to the center of the stirrer support.
2. Insert the shaft of stirrer fan to the shaft of stirrer motor.
3. Insert the cutout of stirrer cover to the tabs on the ceiling.
4. Install the stirrer cover to the oven cavity, and secure it by one canoe clip.



OVEN LAMP REMOVAL

1. Disconnect the power supply cord.
2. Remove three (3) screws holding the hood exhaust louver to oven cavity front flange.
3. Remove the hood exhaust louver from the oven by pushing the right and left tabs of the hood exhaust louver. (Refer to procedure of "HOOD EXHAUST LOUVER REMOVAL")
4. Lift the oven lamp cover up.
5. Now, the oven lamp and the socket are found.
6. Screw the oven lamp off from the lamp socket.
7. Now, the oven lamp is free.

CONTROL PANEL ASSEMBLY, CONTROL UNIT AND KEY UNIT REMOVAL

1. Disconnect the power supply cord.
2. Open the door and block it open.
3. Remove one (1) screw holding the hood exhaust louver to oven cavity front flange.
4. Remove the hood exhaust louver from the oven by pushing the right and left tabs of the hood exhaust louver. (Refer to procedure of "HOOD EXHAUST LOUVER REMOVAL")
5. Remove one (1) screw holding the control panel to the oven cavity front face plate.
6. Release the control panel from the oven cavity front face plate by lifting it up.
7. Disconnect the wire leads from the relays RY1 and RY2.
8. Disconnect the connectors CN-A, CN-B and CN-E from the control unit.
9. Remove the control panel assembly from the oven.
10. Now, the control panel assembly is free.
11. Disconnect the connector CN-G from the control unit.
12. Release the two (2) tabs of LCD holder from the two (2) holes of the key fixing plate.
13. Release the four (4) tabs holding the LCD holder to the tcontrol panel.
14. Remove two (2) screws holding the power unit to the key fixing plate.
15. Release the two (2) tabs holding the power unit to the key fixing plate.
16. Release the one (1) tab holding the LCD to the LCD holder.
17. Release the four (4) tabs holding the LSI unit to the LCD holder.
18. Remove the LCD holder and the LED sheet.
19. Now, the control unit is free.
20. Remove the one (1) screw holding the key fixing plate to the control panel.
21. Release the six (6) tabs holding the key fixing plate to the control panel.
22. Remove the key fixing plate from the control panel.
23. Tear the key unit from the key fixing plate.
24. Now, the key unit is free

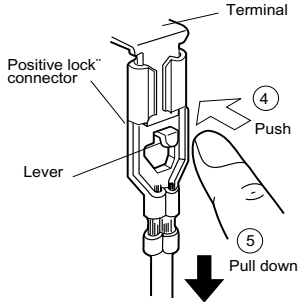
NOTES FOR KEY UNIT REPLACEMENT

1. Do not reuse the torn key unit because the performance of the adhesive becomes weak.
2. Before attaching a new key unit, wipe off remaining adhesive on the key fixing plate surfaces completely with a soft cloth soaked in alcohol.
3. When attaching the key unit to the key fixing plate, adjust the upper edge and right edge of the key unit to the correct position of key fixing plate.
4. Stick the key unit firmly to the key fixing plate by rubbing with soft cloth not to scratch.

POSITIVE LOCK® CONNECTOR (NO-CASE TYPE) REMOVAL

1. Disconnect the power supply cord and remove the oven from wall and remove outer case. (Refer to procedure of "Removal of Oven from Wall" and "Outer case Removal")
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Push the lever of positive lock® connector.
5. Pull down on the positive lock® connector.

CAUTION: WHEN CONNECTING THE POSITIVE LOCK® CONNECTORS TO THE TERMINALS, INSTALL THE POSITIVE LOCK® SO THAT THE LEVER FACES YOU.



Positive lock® connector

DOOR SENSING SWITCH, SECONDARY INTERLOCK SWITCH AND MONITOR SWITCH REMOVAL

1. Disconnect the power supply cord and remove the oven from wall and remove outer case. (Refer to procedure of "Removal of Oven from Wall" and "Outer case Removal")
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Remove the control panel assembly, referring to the procedure of "CONTROL PANEL ASSEMBLY , CONTROL UNIT AND KEY UNIT REMOVAL".
5. Remove the two (2) screws holding the latch hook to the oven cavity front flange.
6. Remove the latch hook from the oven cavity front flange.
7. Disconnect the wire leads of each switch.
8. Remove each switch from the latch hook by pushing the one (1) stopper tub holding each switch.
9. Now, each switch is free.

Re-install

1. Re-install each switch in its place. The secondary interlock switch is in the lower position, door sensing switch is in the upper position, is in the upper vertical position and the monitor switch is in the middle position.
2. Re-connect wire leads to each switch. Refer to pictorial diagram.
3. Secure the latch hook (with two (2) mounting screws) to oven cavity front flange.
4. Make sure that the monitor switch is operating properly and check continuity of the monitor circuit. Refer to chapter "Test Procedure" and "Adjustment procedure".

DOOR SENSING SWITCH, PRIMARY INTERLOCK SWITCH, AND MONITOR SWITCH ADJUSTMENT

1. Disconnect the power supply cord and remove the oven from wall and remove outer case. (Refer to procedure of "Removal of Oven from Wall" and "Outer case Removal")
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Remove the control panel assembly, referring to the procedure of "CONTROL PANEL ASSEMBLY , CONTROL UNIT AND KEY UNIT REMOVAL".

If the door sensing switch, primary interlock switch and monitor switch do not operate properly due to a misadjustment, the following adjustment should be made.

5. Loosen the two (2) screws holding latch hook to the oven cavity front flange.
6. With door closed, adjust latch hook by moving it back and forth, and up and down. In and out play of the door allowed by the upper and lower position of the latch hook should be less than 0.5mm. The vertical position of the latch hook should be adjusted so that the door sensing switch, secondary interlock switch are activated with the door closed. The horizontal position of the latch hook should be adjusted so that the monitor switch is activated with the door closed.
7. Secure the screws with washers firmly.
8. Check all of the switches operation. If any switch has not activated with the door closed, loosen screw and adjust the latch hook position.

After adjustment, check the following.

1. In and out play of door remains less than 0.5mm when in the latched position. First check upper position of latch hook, pushing and pulling upper portion of door toward the oven face. Then check lower portion of the latch hook, pushing and pulling lower portion of the door toward the oven face. Both results (play in the door) should be less than 0.5mm.
2. The door sensing switch, and primary interlock switch interrupt the circuit before the door can be opened.
3. Monitor switch contacts close when door is opened.
4. The contact of door sensing switch and primary interlock switch open within 1.2mm gap between right side of cavity face plate and door when door is open.
5. Re-install outer case and check for microwave leakage around door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

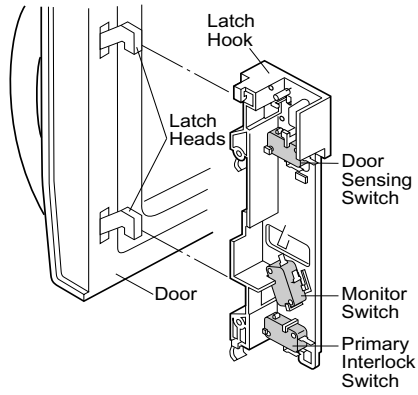


Figure C-1. Latch Switch Adjustments

DOOR REPLACEMENT

DOOR ASSEMBLY REMOVAL

1. Disconnect the power supply cord and remove the oven from wall and remove outer case. (Refer to procedure of "Removal of Oven from Wall" and "Outer case Removal")
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Remove the hood exhaust louver from the oven cavity by pushing the right and left tabs of the hood exhaust louver. (Refer to the procedure of "HOOD EXHAUST LOUVER REMOVAL".)
5. Insert a putty knife (thickness of about 0.5mm) into the gap A between the door stopper and the choke cover as shown in Figure C-3 to free engaging parts.
6. Lift up the door stopper.
7. Now, the door stopper is free from the door assembly.
8. Lift up the door assembly to release the upper and lower door hinge pins from the upper and lower oven hinges.
9. Now, the door assembly is free.

Note: When the individual parts are replaced, refer to "Door Disassembly".

DOOR ASSEMBLY RE-INSTALL

1. On re-installing door, insert the lower oven hinge to lower door hinge pin.
2. Insert the upper oven hinge to the upper door hinge pin.
3. Shut the door (close the contacts of interlock switches).
4. Make sure upper and lower oven hinges are inserted into the upper an lower door hinge pins.
5. Make sure the door is parallel with oven face lines (left and upper side lines) and door latch heads pass through latch holes correctly.
6. Re-install the door stopper to the door assembly.
7. Re-install the hood exhaust louver to the oven cavity front face plate.

Note: After any service to the door;

(A) Make sure that door sensing switch and secondary interlock switch are operating properly. (Refer to chapter "Test Procedures".)

(B) An approved microwave survey meter should be used to assure compliance with proper microwave radiation emission limitation standards.

After any servicing, make sure of the following :

1. Door latch heads smoothly catch latch hook through latch holes and that latch head goes through center of latch hole.
2. Deviation of door alignment from horizontal line of cavity face plate is to be less than 1.0mm.
3. Door is positioned with its face pressed toward cavity face plate.
4. Re-install outer case and check for microwave leakage around door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

Note: The door on a microwave oven is designed to act as an electronic seal preventing the leakage of microwave energy from oven cavity during cook cycle. This function does not require that door be air-tight, moisture (condensation)-tight or light-tight. Therefore, occasional appearance of moisture, light or sensing of gentle warm air movement around oven door is not abnormal and do not of themselves indicate a leakage of microwave energy from oven cavity.

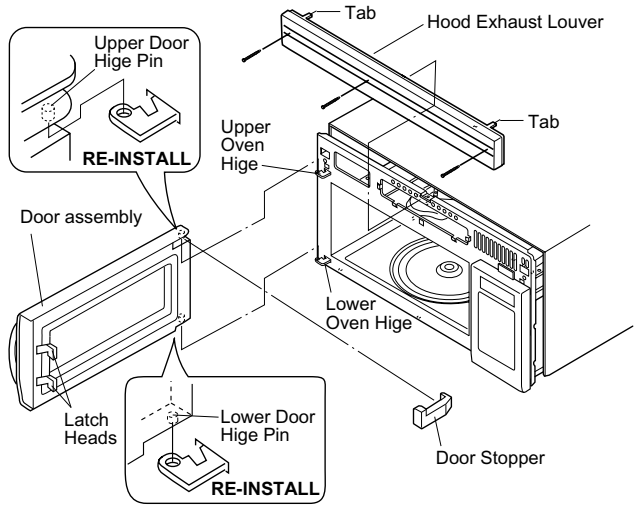


Figure C-2. Door Replacement and adjustment

DOOR DISASSEMBLY

1. Disconnect the power supply cord and remove the oven from wall and remove outer case. (Refer to procedure of "Removal of Oven from Wall" and "Outer case Removal")
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Remove the hood exhaust louver from the oven cavity by pushing the right and left tabs of the hood exhaust louver. (Refer to the procedure of "HOOD EXHAUST LOUVER REMOVAL".)
5. Remove door assembly, refer to "Door Replacement". Replacement of door components are as follows:
6. Place door assembly on a soft cloth with latches facing up.

Note: As the engaging part of choke cover and door frame are provided at 15 places, do not force any particular part.

CHOKE COVER

7. Insert a putty knife (thickness of about 0.5mm) into the gap A between the choke cover and door stopper and between the choke cover and the door frame as shown Figure C-3 to free engaging parts.
8. Pry the choke cover by inserting a putty knife in order shown in Figure C-3.
9. Now choke cover is free from door panel and door frame.

DOOR FRAME

10. Remove six (6) screws holding the door panel and the door handle to the door frame assembly.
11. Release the door frame assembly from the door panel.

NOTE: It is easier to release the engaging parts of the upper or lower door hinge pin side at first.

12. Now, door frame assembly is free.

LATCH SPRING, LATCH HEAD AND DOOR PANEL

13. Release the latch spring from the tab of the latch head and tab of the door frame.
14. Release the latch head from the door frame.
15. Now, the latch spring, latch head and door frame are free.

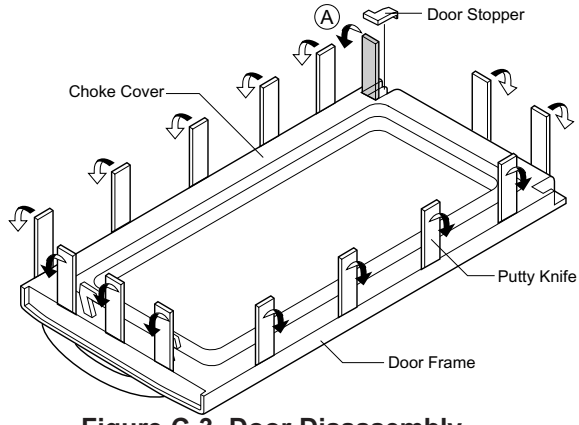


Figure C-3. Door Disassembly

DOOR GLASS

16. Remove the glass stopper from the door frame by releasing the tab of door frame.
17. At first, slide the door glass toward the glass stopper side, and then slide it up. And release it from the right and lower long tabs of the door frame.
18. Release the door glass from the upper long tab of the door frame.
19. Release the door glass from the long tabs of the door frame.
20. Now, the door glass is free.

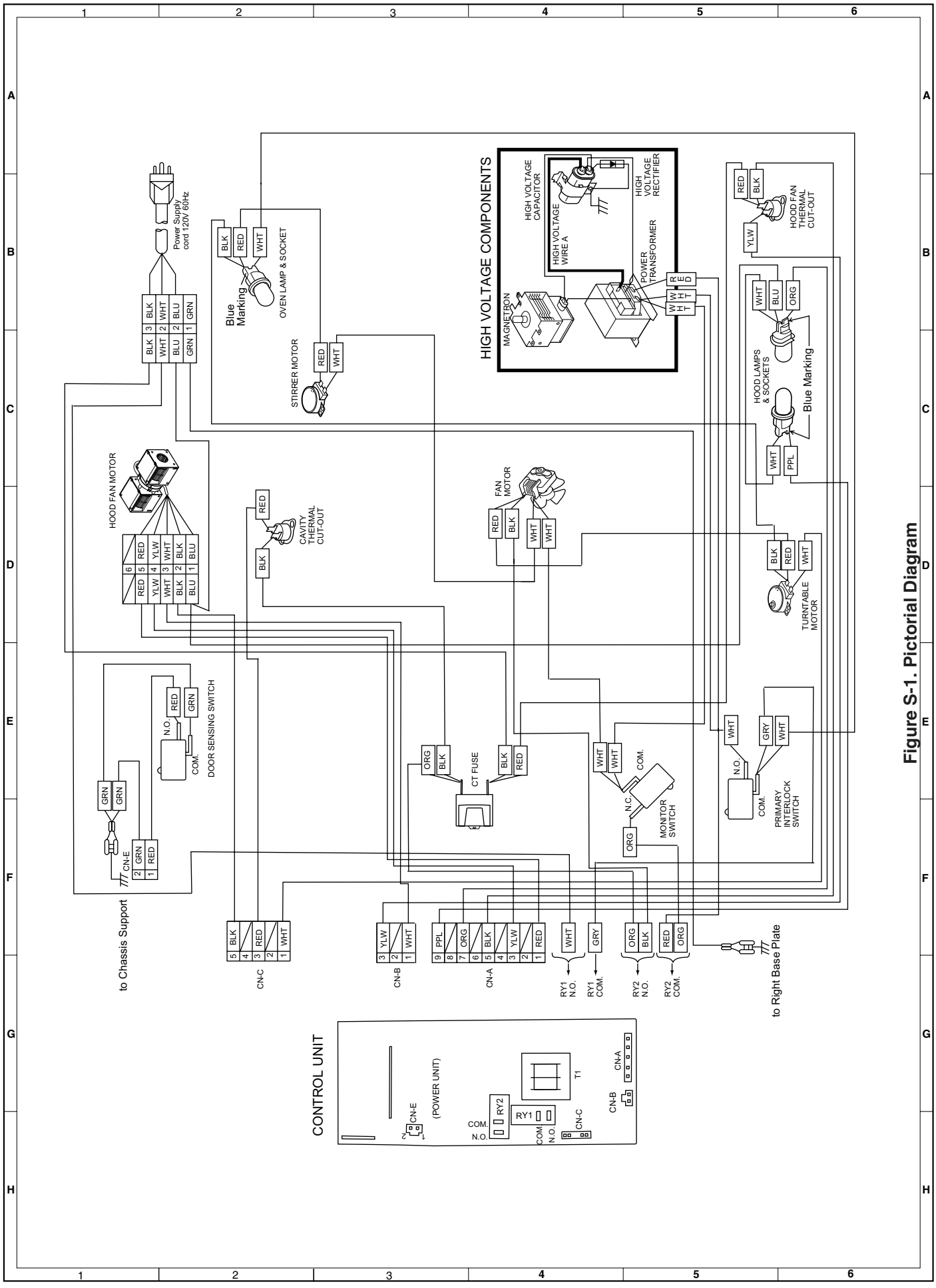


Figure S-1. Pictorial Diagram

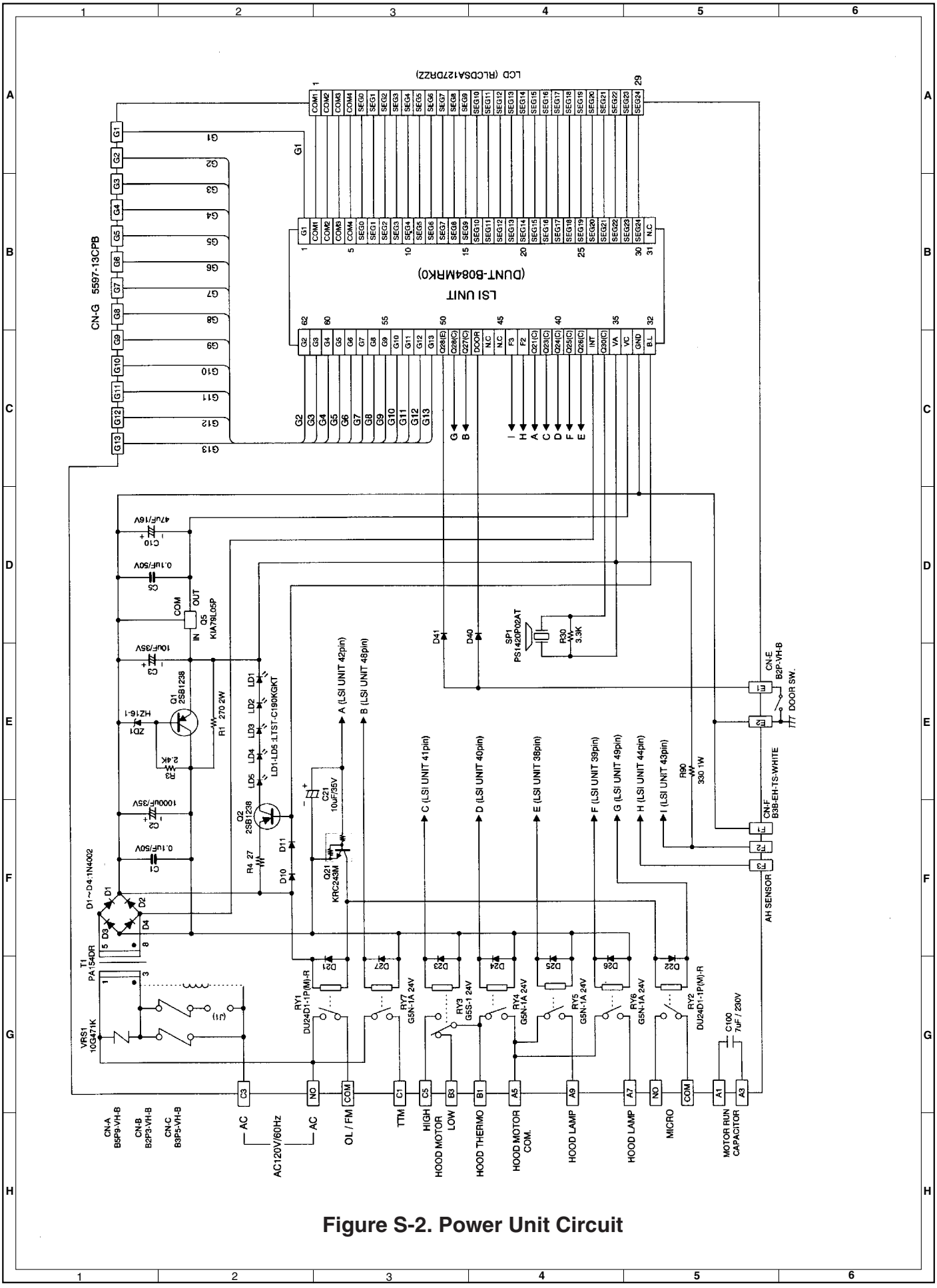


Figure S-2. Power Unit Circuit

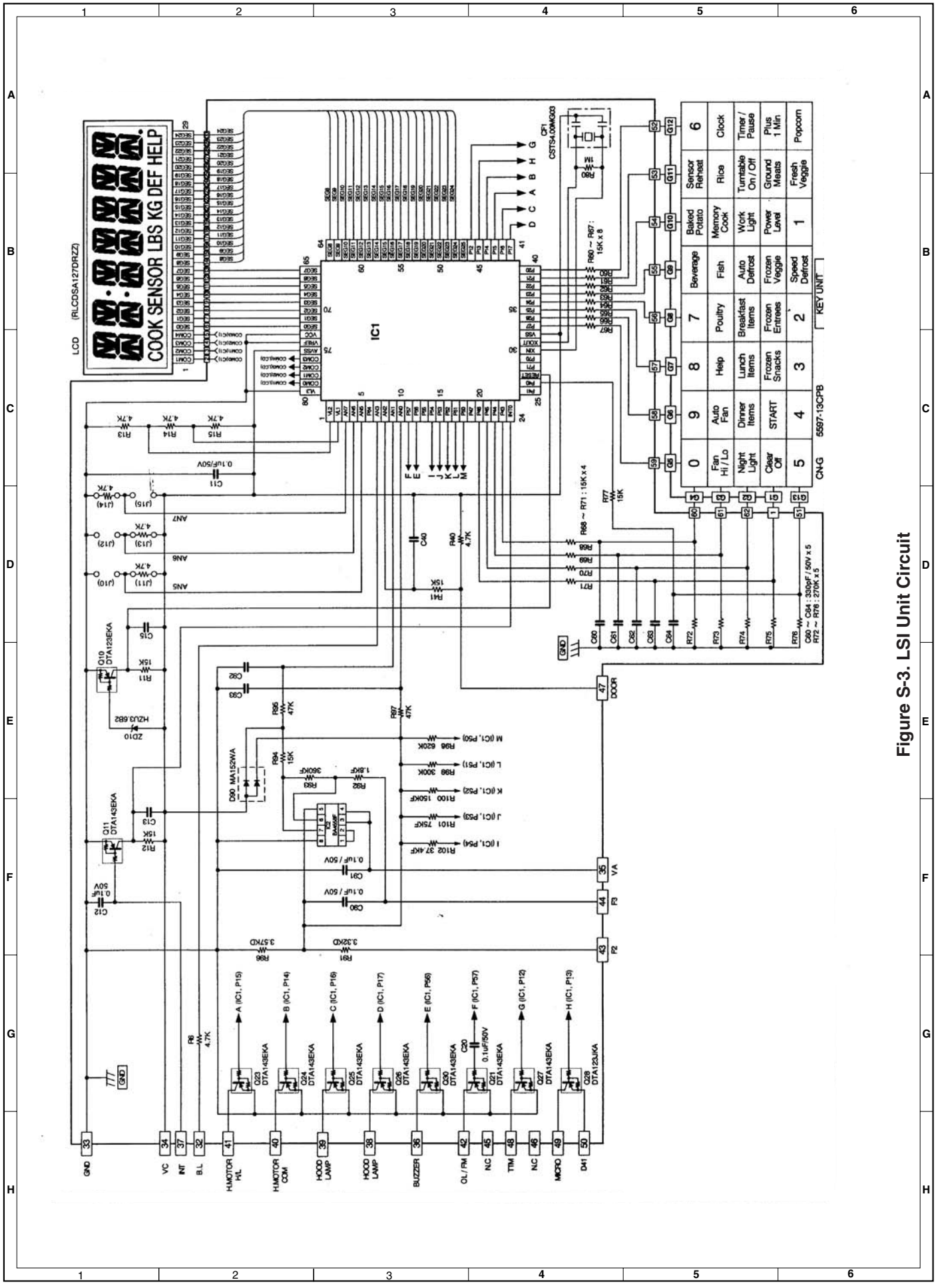


Figure S-3. LSI Unit Circuit

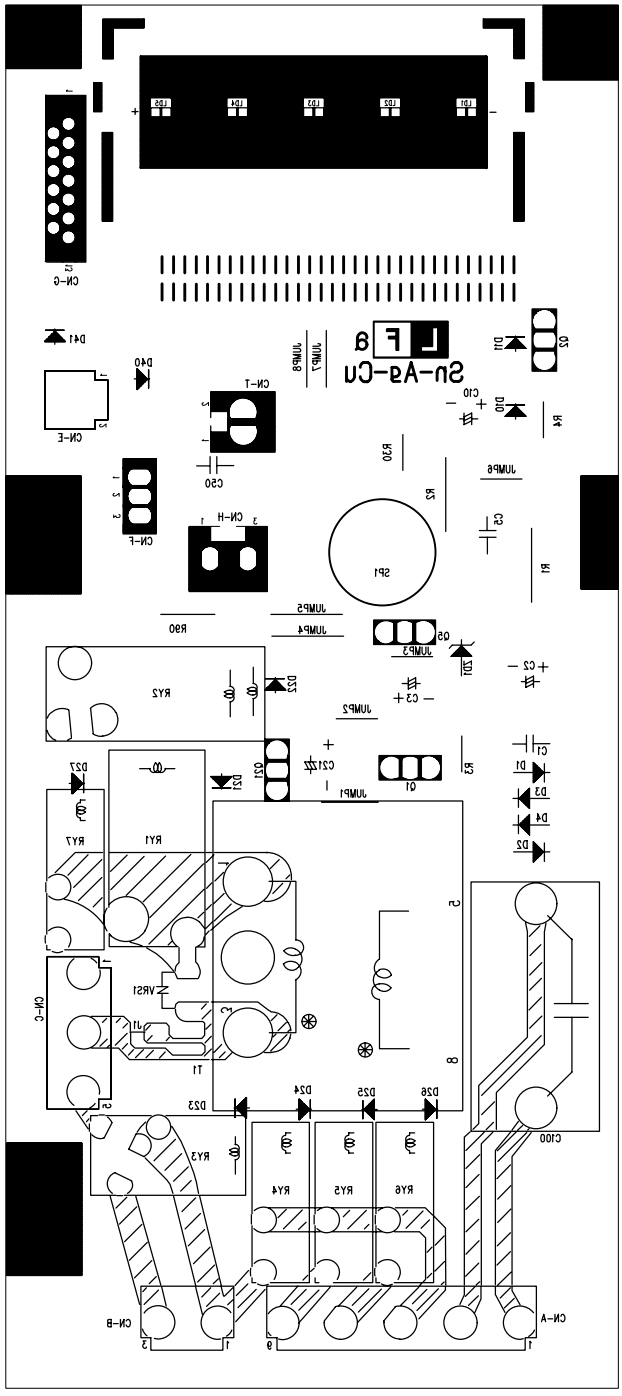


Figure S-5. Printed Wiring Board

PARTS LIST

Note: The parts marked "Δ" may cause undue microwave exposure.
The parts marked "*" are used in voltage more than 250V.

	REF. NO.	PART NO.	DESCRIPTION	Q'TY
			ELECTRIC PARTS	
*	1	FH-DZB015MRY0	High voltage rectifier assembly	1
*	2	RC-QZA234WRE0	High voltage capacitor	1
	3	RMOTDA252WRZZ	Turntable motor	1
	4	RMOTDA258WRZZ	Stirrer motor	1
	5	RTHM-A136WRZZ	Thermal cut-out N.O. 60°C (Hood Fan)	1
	6	RTRN-B081MRE0	Power transformer	1
Δ	7	RV-MZA324WRZZ	Magnetron	1
	8	QSW-MA085WRE0	Pri. interlock and door sensing switches	2
	9	FFS-BA019/KIT	Monitor switch (V-16G-2C25)/CT fuse (20A 250V AC) & Inst.	1
	10	FACCDB011MRE0	Power supply cord	1
	11	QSOCLB006MRE0	Oven lamp socket	3
	12	FMOTEA402WRK0	Hood fan motor	1
	13	RMOTEA346WRE0	Fan motor	1
	14	RLMPTA086WRZZ	Oven lamp	3
	15	RTHM-A135WRZZ	Thermal cut-out 145°C (Cavity)	1
	16	FDTCTA201WRK0	AH Sensor	1
			CABINET PARTS	
	17	LSTY-B021MRP0	Rear stay	1
	18	PDIF-B052MRF0	Hood exhaust louver [GLMV169DB]	1
	18	PDIF-B045MRF0A	Hood exhaust louver [GLMV169DS]	1
	18	PDIF-B046MRF0A	Hood exhaust louver [GLMV169DQ]	1
	18	FDIF-B016MRK0	Hood exhaust louver [PLMV169DC]	1
	19	GDAI-B064MRP0A	Right base plate	1
	20	PCUSUB045MRP0	Cabinet cushion	1
	21	GCABUB142MRP0	Outer case cabinet [GLMV169DB/PLMV169DC]	1
	21	GCABUB143MRP0	Outer case cabinet [GLMV169DS]	1
	21	GCABUB144MRP0	Outer case cabinet [GLMV169DQ]	1
	22	TMAPCB081MRR0	Schematic diagram	1
	23	FANGKB020MRY0	Hood lamp glass assembly	1
	24	LANGQB062MRP0	Hood lamp glass angle	1
	25	PGLSPB004MRE0	Hood lamp glass	1
	26	PCOVPB115MRT0	Base cover	1
	27	PCUSUB040MRP0	Base cover cushion	1
	28	PCUSGB028MRP0	Cushion	1
	29	PCUSUB047MRP0	Mag cushion	1
			CONTROL PANEL PARTS	
	30	CPWBFB099MRU0	Control unit	1
	31	HPNLCB194MRR0	Control panel sub. assembly [GLMV169DB]	1
	31	HPNLCB196MRR0	Control panel sub, assembly [GLMV169DQ]	1
	31	HPNLCB195MRR0	Control panel sub, assembly [GLMV169DS]	1
	31	FPNLCB484MRK0	Control panel sub. assembly [PLMV169DC]	1
	32	FUNTKB415/KIT	Key unit [GLMV169DB/PLMV169DC]	1
	32	FUNTKB417/KIT	Key unit [GLMV169DQ]	1
	32	FUNTKB416/KIT	Key unit [GLMV169DS]	1
	33	LANGQB061MRP0	Key fixing plate	1
	34	XEPSD30P10XS0	Screw; 3mm x 10mm	1
	35	XEPSD30P08XS0	Screw; 3mm x 10mm	3
			OVEN PARTS	
	36	FFTA-B005MRK0	Exhaust damper assembly	1
	37	FROLPB025MRK0	Turntable support assembly	1
	38	NTNT-A090WRE0	Turntable tray	1
	39	LANGKB010MRP0	Capacitor holder	1
	40	FCOVPB016MRK0	Stirrer cover assembly	1
	41	FFAN-B010MRK0	Stirrer fan assembly	1
	42	**********	Oven cavity (Not replaceable part)	1
	43	PPACGB014MRF0	Turntable motor packing	1
	44	PHOK-B024MRF0	Latch hook	1
	45	LANGTB036MRP0	Unit mounting plate	1
	46	NFANPB001MRE0	Fan blade	1
	47	LBSHC0037WRE0	Cord bushing	1
	48	PCOVPB065MRP0	Oven lamp cover	1
	49	PDUC-B095MRP0	Hood intake duct R	1
	50	PCUSUB039MRP0	Hood intake duct cushion	2
	51	PFILWB005MRP0	Lamp filter	1
	52	LANGTB046MRP0	Chassis support left	1
	53	LANGTB040MRP0	Chassis support right	1
	54	PDUC-B094MRF0	Hood duct	1

REF. NO.	PART NO.	DESCRIPTION	Q'TY
55	LHLD-B012MRF0	Rack holder	2
56	LSTPPB031MRF0	Door stopper	1
57	PCOVPB076MRF0	Louver cover A	1
58	PCOVPB077MRF0	Louver cover B	1
59	PCOVPB078MRF0	Louver cover C	1
60	PDUC-B098MRP0	Magnetron air guide	1
61	LHLD-B016MRF0	Left rear holder	1
62	LHLD-B017MRF0	Right rear holder	1

DOOR PARTS

	63	CDORFB366MRK0A	Door assembly [PLMV169DC]	1
	63	CDORFB361MRK0A	Door assembly [GLMV169DB]	1
	63	CDORFB362MRK0A	Door assembly [GLMV169DS]	1
	63	CDORFB363MRK0A	Door assembly [GLMV169DQ]	1
	64	FDORFB083MRT0	Door panel assembly [GLMV169DB/PLMV169DC]	1
	64	FDORFB084MRT0	Door panel assembly [GLMV169DS]	1
	64	FDORFB085MRT0	Door panel assembly [GLMV169DQ]	1
	65	FCOV-B267MRK0	Door frame assembly [GLMV169DB] (not available in S/S)	1
	65	FCOV-B268MRK0	Door frame assembly [GLMV169DS]	1
	65	FCOV-B269MRK0	Door frame assembly [GLMV169DQ]	1
	66	PGLSPB072MRE0	Front door glass [GLMV169DB/PLMV169DC]	1
	66	PGLSPB073MRR0	Front door glass [GLMV169DS]	1
	66	PGLSPB074MRR0	Front door glass [GLMV169DQ]	1
	67	LSTPPB030MRF0	Latch head	1
	68	LSTPPB032MRF0	Glass stopper	1
	69	MSPRTA046WRE0	Latch spring	1
Δ	70	GWAKPB187MRR0	Door frame [GLMV169DB] (not available in S/S)	1
Δ	70	GWAKPB188MRR0	Door frame [GLMV169DS]	1
Δ	70	GWAKPB189MRR0	Door frame [GLMV169DQ]	1
	71	FCOVHB005MRK0	Choke cover assembly	1
	72	PSHEPB024MRE0	Sealer film	1
	73	FHNDPB015MRK0	Door handle [PLMV169DC]	1
	73	JHNDPB049MRF0	Door handle [GLMV169DB]	1
	73	JHNDPB050MRF0	Door handle [GLMV169DS]	1
	73	JHNDPB051MRF0	Door handle [GLMV169DQ]	1
	74	XCPSD40P08000	Screw : 4mm x 8mm	4
	75	XCPSD40P10000	Screw : 4mm x 12mm	2

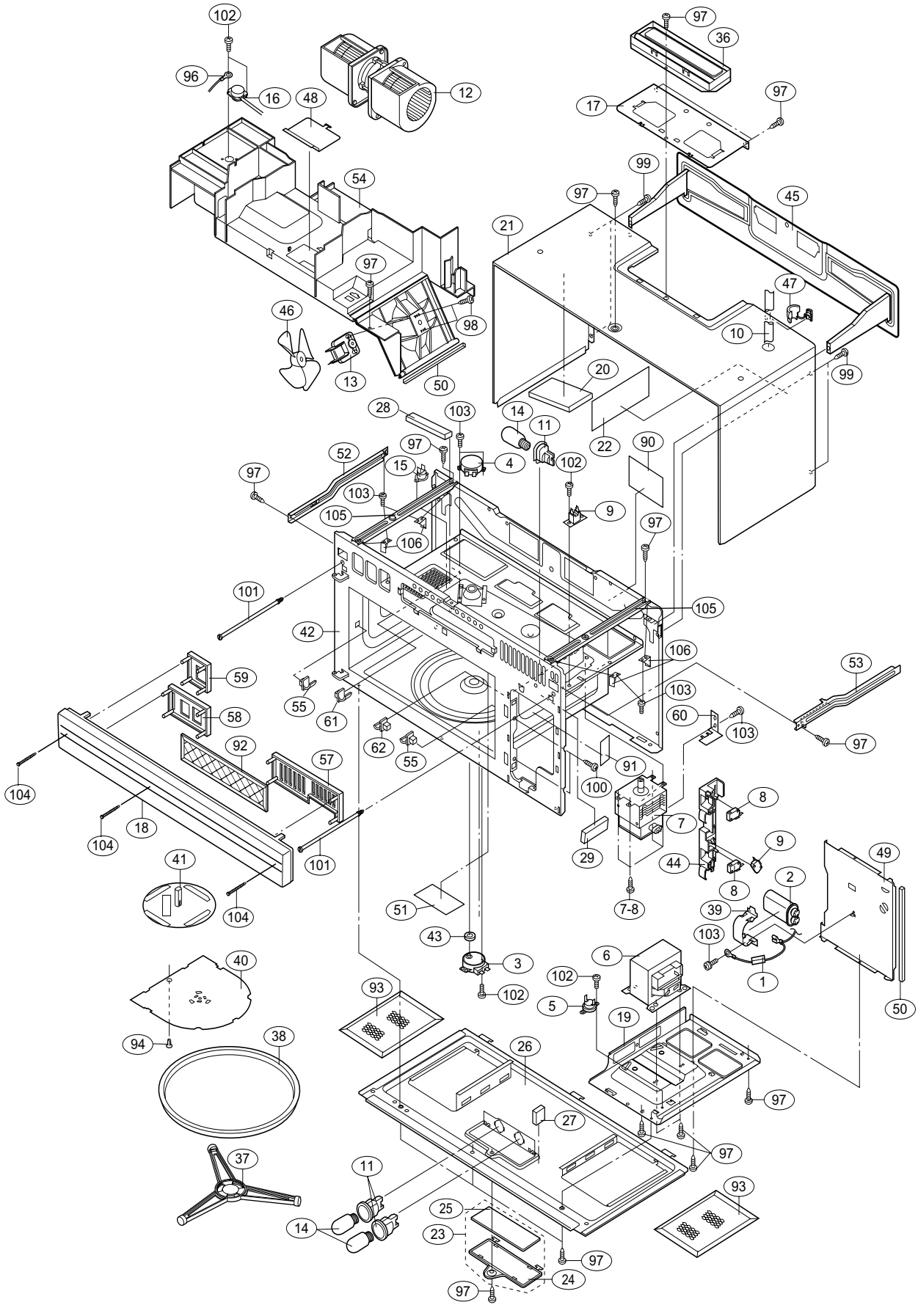
MISCELLANEOUS

76	CFZK-B131MRK0	Installation material assembly	1
77	LBSHC0040MRE0	Grommet	1
78	LX-BZ0195WRE0	Toggle screw	4
79	LX-MZB001MRE0	Cord holder	1
80	XBRSD50P60000	Screw : 5mm x 60mm	2
81	XOTSD40P12000	Screw : 4mm x 12mm	1
82	XTSSD50P35000	Screw : 5mm x 35mm	6
83	XWHSD50-16300	Washer	2
84	TINSEB385MRR0	Installation instruction	1
85	TINSEB380MRR0	Operation manual	1
86	TINSKB047MRR0	Top template	1
87	TINSKB048MRR0	Wall template	1
88	QW-QZB023MRE0	High voltage wire A	1
89	FW-VZB234MRE0	Main harness A	1
90	TCAUAB048MRR0	DHHS/GRD/caution label	1
91	TCAUAB050MRR0	Monitor caution label	1
92	PFIL-B011MRE0	Charcoal filter	1
93	PFIL-B010MRE0	Grease filter	2
94	PCLICB003MRE0	Canoe clip	1
95	UAMI-B009MRM0	Rack	1
96	QW-VZB010MRE0	Sensor gnd wire	1

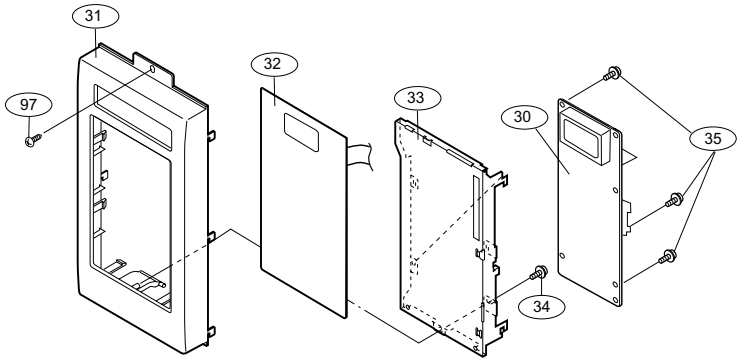
SCREWS,NUTS, WASHERS AND MISC.

97	XOTSE40P12000	Screw : 4mm x 12mm	10
98	XBTSD40P08000	Screw : 4mm x 8mm	2
99	LX-CZA038WRE0	Special screw	4
100	LX-CZ0052WRE0	Special screw	2
101	LX-BZB012MRE0	Unit mounting screw	2
102	XCBSD30P08000	Screw : 3mm x 8mm	6
103	LX-BZA041WRE0	Special screw	9
104	LX-CZB024MRE0	Louver screw [GLMV169DS/GLMV169DQ]	3
104	LX-CZB025MRE0	Louver screw [PLMV169DC/GLMV169DB]	3
105	LANGTB055MRP0	Chassis support	2
106	LANGTB100MRP0	Chassis support gusset	4

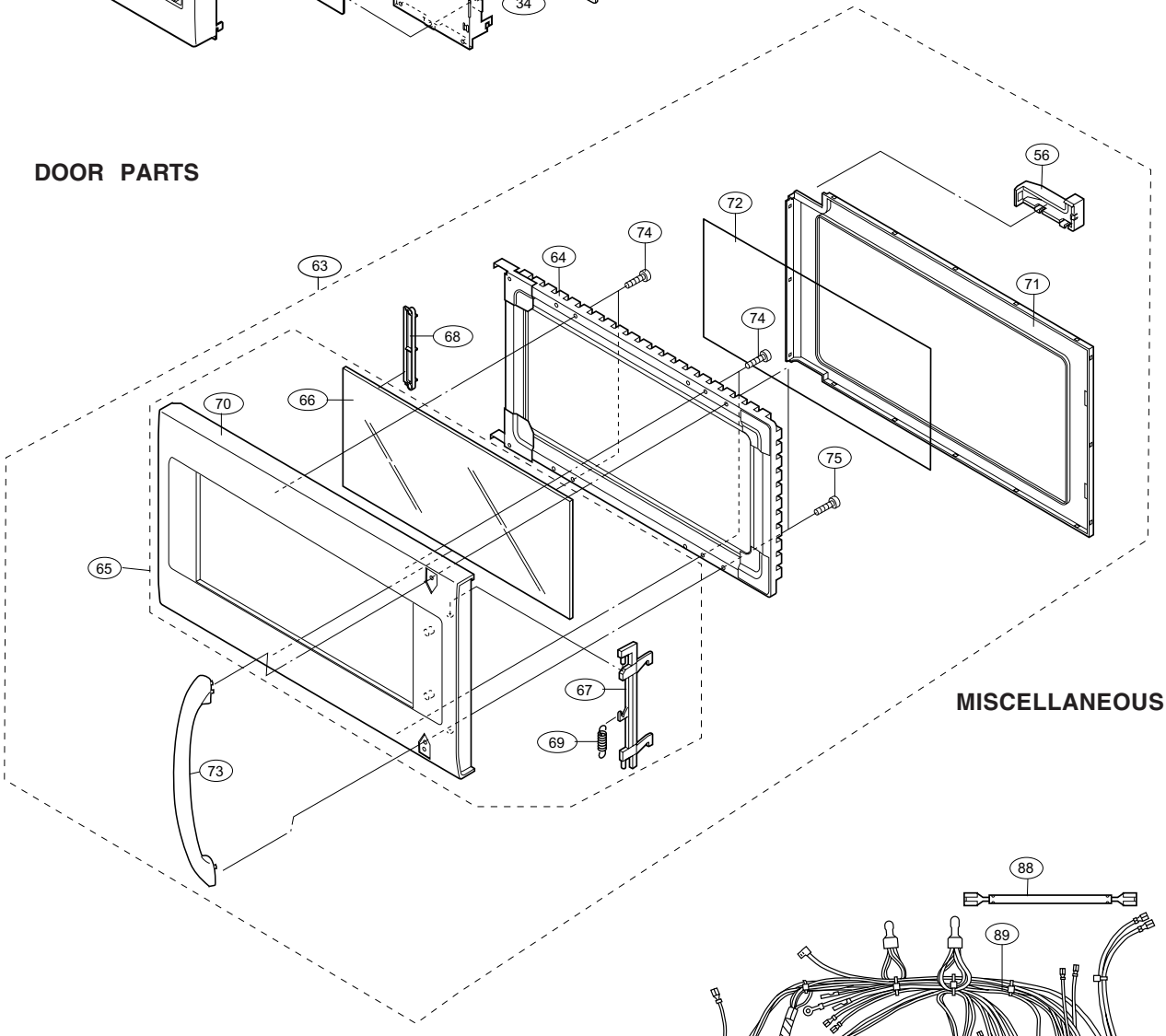
OVEN AND CABINET PARTS



CONTROL PANEL PARTS



DOOR PARTS



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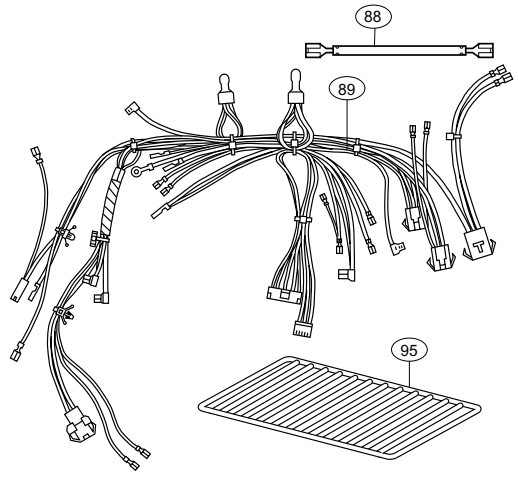
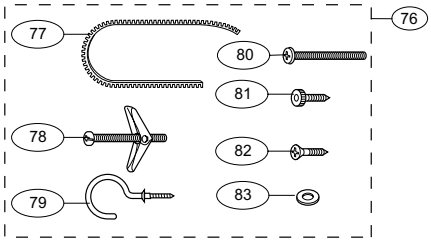
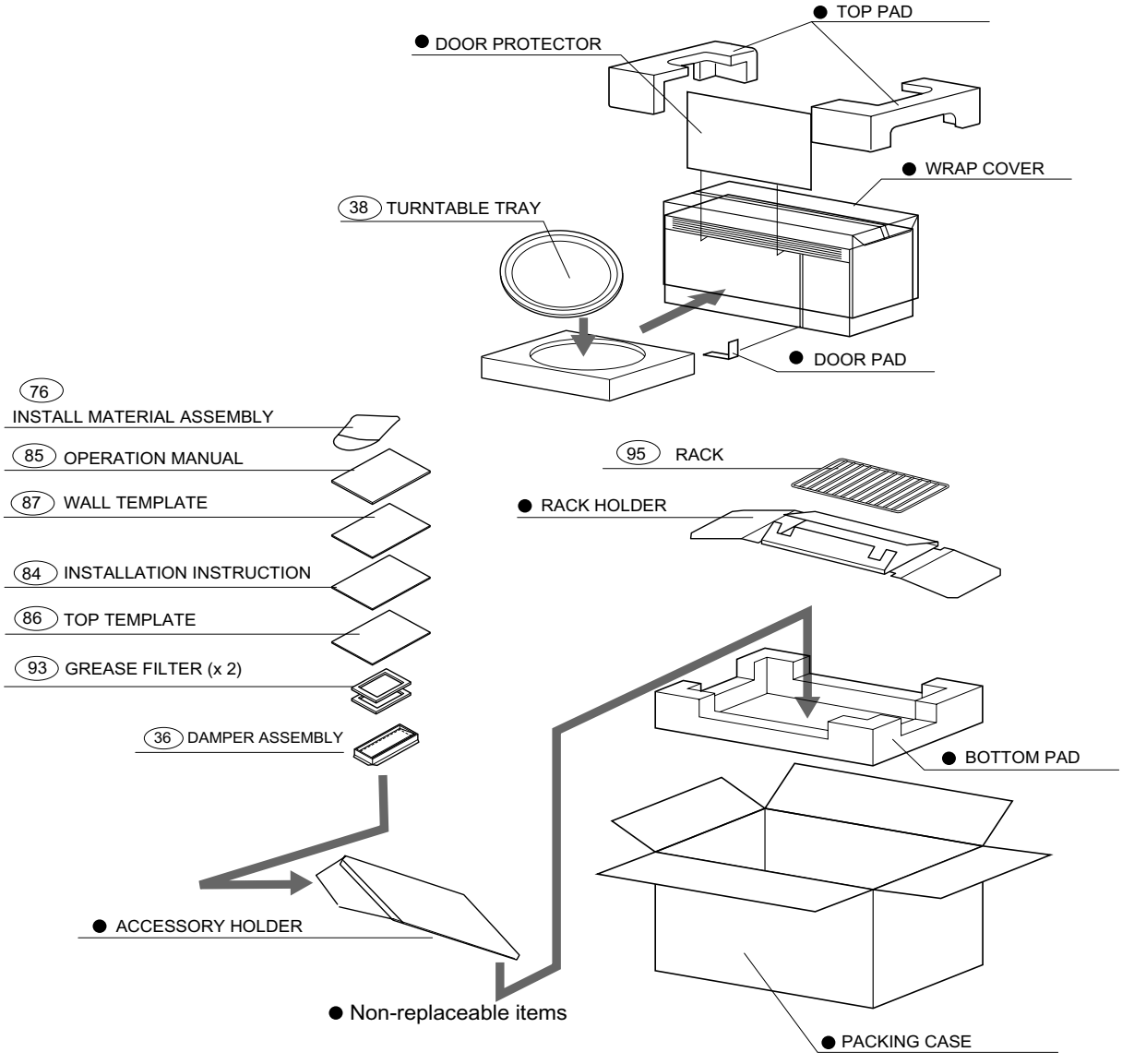




PACKING AND ACCESSORIES



NOTES

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